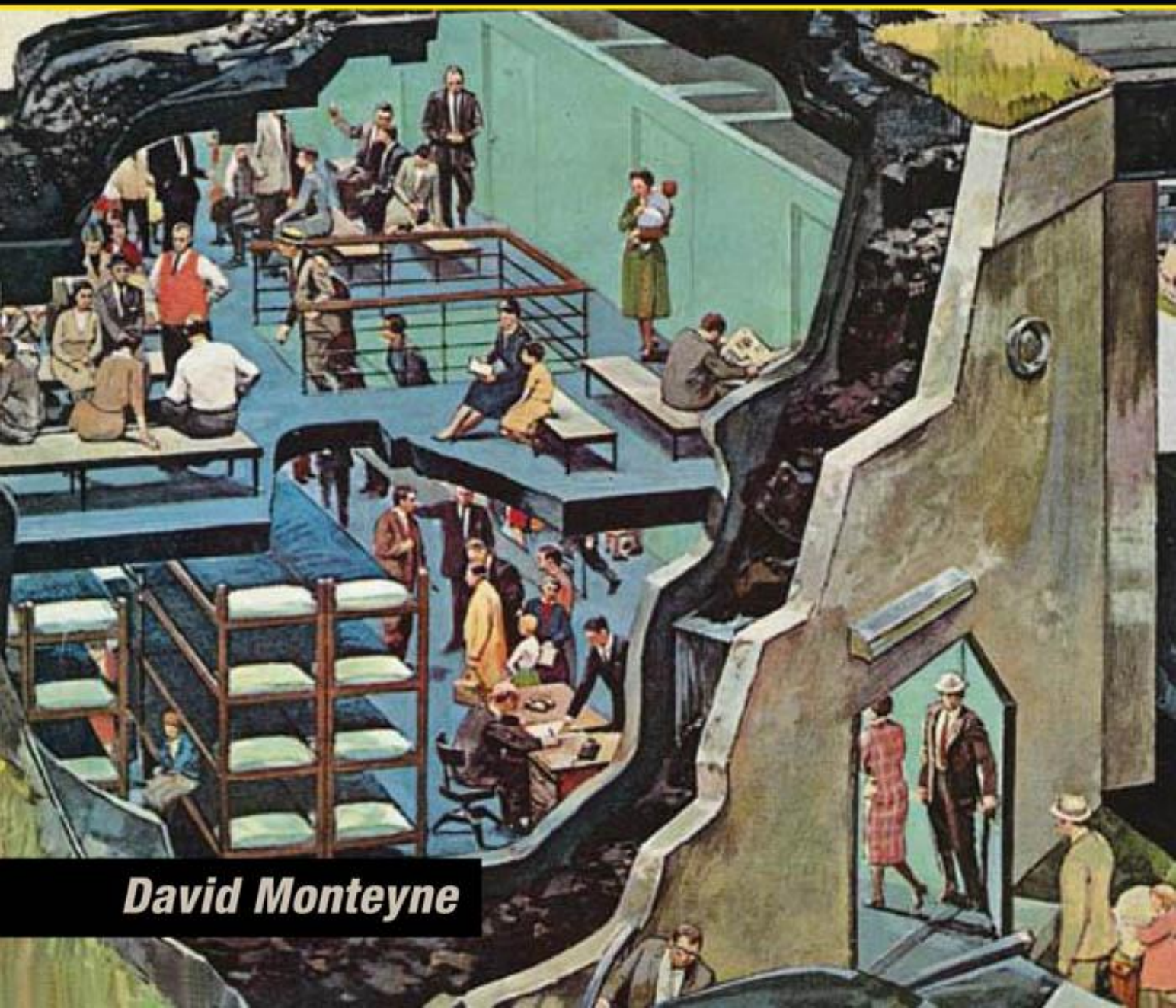
DESIGNING FOR CIVIL DEFENSE IN THE COLD WAR

FALLOUT SHELTER



David Monteyne

FALLOUT SHELTER

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Designing for Civil Defense in the Cold War

David Monteyne

ARCHITECTURE, LANDSCAPE, AND AMERICAN CULTURE SERIES

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For Mom and Dad

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CONTENTS

Abbreviations ix

INTRODUCTION xi

1. HYPOTHETICAL HIROSHIMAS 1
City, Suburb, and Shelter in 1950s Civil Defense

2. SURVEYING THE COLD WAR LANDSCAPE 35
The National Fallout Shelter Program
Fallout Protection 49

3. SHELTERING COMMUNITIES 77
City and Social Planning for Civil Defense

4. DESIGN INTELLECTUALS 107
Professional Architects and Civil Defense

5. PERFORMING ARCHITECTURAL EXPERTISE 143
Designs for Fallout Shelter
Fallout Shelter Design 154

6. COLD WAR CONSTRUCTIONS 189
Fallout Shelter in New Buildings

7. BUNKER ARCHITECTURE FOR THE COLD WAR 231
Boston City Hall

EPILOGUE 271

Acknowledgments 285
Notes 287
Index 335

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ABBREVIATIONS

A & E Serv. Div.	Architects and Engineers Services Division
AIA	American Institute of Architects
AIAA	American Institute of Architects Archives
COE	Army Corps of Engineers
CSP	Community Shelter Plan
DCPA	Defense Civil Preparedness Agency
DOD	Department of Defense
EOC	Emergency Operating Center
EOCB	Emergency Operations Centers Branch
EOD	Emergency Operations Division
FCDA	Federal Civil Defense Administration
FEMA	Federal Emergency Management Agency
NACP	National Archives at College Park, Maryland
NLMA	National Lumber Manufacturers Association
NSRB	National Security Resources Board
NWAA	Northwest Architectural Archives, University of Minnesota, Minneapolis
OCD	Office of Civil Defense
OCDM	Office of Civil and Defense Mobilization
P/A	*Progressive Architecture* magazine
PDD	Plans Development Division
PER	Project East River
POD	Plans and Operations Directorate
RG	Record Group

SAB	Survey and Analysis Branch
SRI	Stanford Research Institute
TSB	Technical Support Branch
TSD	Technical Services Directorate

INTRODUCTION

The security guard rolled his chair aside while keeping one eye on the surveil-lance camera images emanating from his bank of screens. The building manager pushed away a large table, revealing a steel trapdoor set flush with the concrete floor. "Here it is," he said, bending over to grab an inset ring and pull up the heavy door. A flight of steel stairs with open risers disappeared in the darkness of the dirty subbasement. "After you," he said. I gingerly descended, then waited at the edge of light cast down from the hatch opening. I thought about my newly polished dress shoes and the likelihood of rats. "There's a light switch down here somewhere," muttered the building manager, who had joined me at the bottom. When he flicked it on a long corridor appeared, lit by a straight row of evenly spaced bare bulbs receding into the distance. Immediately apparent, lining both sides of the corridor, were seemingly endless stacks of cardboard boxes. Each one was marked with a telltale yellow symbol—the letters CD inscribed within a triangle, within a solid circle—and the words "CIVIL DEFENSE SHELTER SUPPLIES FOOD." This was what I was here to see.

These high-energy crackers, stored in this nondescript space, were material evidence of architecture for civil defense. During the Cold War, architects had surveyed this building and determined that many of its everyday office and public spaces offered excellent shelter from fallout radiation. In turn, the federal civil defense agency had marked the building with signage and supplied these survival rations, first aid kits, emergency commodes, and Geiger counters. Volunteers had delivered the supplies, and building personnel at the time had located available storage areas in the building's subbasements.

I also was there to see the building itself: Boston City Hall. As an architectural historian, I was aware that it was an icon of 1960s modernism in the United States. Several years earlier I had embarked on a study attempting to explain why North American architects and their clients

adopted a particular architectural style for public buildings in the 1960s. Boston City Hall was a prime example of this architectural approach, what I had come to think of superficially as the "bunker style." I had not been the only observer to note the seemingly defensive and militaristic aesthetic of these buildings, characterized as they are by bold, rectilinear masses in exposed, rough concrete. But what lay behind this choice of aesthetic? What concerned American architects and their collaborators at the time?

During the 1950s and 1960s, the period of this study, the hot button building security issue in the United States was the aftermath of nuclear war. I found that civil defense experts allied with architects on numerous fronts in the Cold War: planning for urban dispersal, shelter surveys and technical reports, design competitions and charrettes, the construction of buildings with fallout shelter. At the time, civil defense officials also had been aware of Boston City Hall's significance within architectural discourse. They had distributed a slick publication celebrating the civil defense aspects of the building. This publication had led me back here, to an example of the bunker style. Stepping over debris in the dingy depths of Boston City Hall confirmed for me that this bunker architecture went more than skin deep.

This study traces a developing alliance between architecture and government during the early Cold War, when U.S. civil defense agencies formed mutually beneficial partnerships with professional architects. The purpose of civil defense was planning to ensure social, economic, and political continuity after large-scale catastrophes, especially nuclear war. Civil defense relied on architects to demonstrate how plans for protecting citizens in the imagined aftermath of nuclear attack were based on the material realities of building construction and everyday spaces. By developing a discourse and a rationalized set of practices concerning civil defense and "shelter," the state worked with architects to redefine what constituted "good design." Providing a foundation for civil defense, and participating in planning for national security, architects aimed to bolster the profession's leadership role in relation to competing experts on the built environment—they hoped to be recognized as defense intellectuals. If preparation for enemy attack was deemed vital to the preservation of the nation, and the duty of all good citizens, then civil defense was an excellent opportunity to display architectural good citizenship.

Architects endeavored to support civil defense in a number of ways especially suited to their expertise. They would promote the planning and dispersal of crowded cities that might become enemy targets; survey

existing buildings to determine which ones offered adequate shelter from the effects of nuclear weapons; participate in research to determine which building systems and materials ought to be specified in the context of Cold War dangers; enter ideas competitions, submit buildings for awards, or otherwise contribute to the advancement of fallout shelter design. By the 1960s, thousands of architects would participate in the National Fallout Shelter Survey, and more than 100 million shelter spaces would be identified. Marked with trademark signage in a bold black and yellow, fallout shelters became a pervasive aspect of everyday life. Civil defense was bound into familiar environments and buildings; the signs still hang by the doors of buildings we pass on our daily routines, some fifty years later. With the survey and myriad other aspects of their national program, civil defense officials and architects hoped to communicate a simple message to all Americans: *The building you are in right now is a fallout shelter.*[1] Any space with a roof, even a modernist glass house, provides some protection from radiation. It was up to professional architects to determine which buildings provided better protection than others. Ultimately, many would learn how to design new structures to serve the dual functions of everyday use and civil defense shelter.

In this book I use the term "civil defense" to stand in for an interrelated—though not always consistent—set of theories and practices propagated by the officials, bureaucrats, and supporters of a series of government agencies. In contrast to the military defense associated with the armed forces, the mission of civil defense was entirely on the home front, in preparation for the aftermath of war. Civil defense has always been, in essence, an aspect of city building. Lewis Mumford demonstrated that early cities were established for common defense as much as for trade or fellow feeling. Drawing on this insight, urban studies scholar Lawrence J. Vale noted that the political legitimacy of rulers resided in their ability to secure the city walls. As city-states developed into nation-states, this responsibility to protect the citizenry extended to frontiers and mass populations.[2] Demarcating and defending a specific territory help produce a national space and, by extension, a national identity among the citizens of that space. Similarly, at the scale of architecture the ability to extend bureaucratic control over space and into everyday settings works to produce individual identifications with centralized power and meanings. That is, subjects' lived experiences of public buildings and public spaces are linked to their understanding of national identity and social relations. While a focus of this book is the architectural profession, I study it not merely as an aesthetic

arbiter or service provider but as the mediator between built environments and the national identity projects framed by government institutions. The phrase "architecture for civil defense," then, refers to a body of design work (built and unbuilt, and perhaps unbuildable), as well as to an alignment of professional practice and discourse with the goals of the state—an alignment pursued by many architects but strongly resisted by others.

Civil defense preparations would help ensure that U.S. environments, citizens, and social structures survived a nuclear war intact. A key purpose of civil defense, and of architecture for civil defense, was to demonstrate that what good citizens already did in everyday life was a model for the roles they should perform when under attack. Their roles in civil defense, as in everyday life, would be conditioned by racial, gender, and other identifying characteristics. In its planning and implementation, civil defense broadcast a specific ideological message that both emphasized the national importance of a continuing Cold War against communism and described the duties of ideal subjects on the home front. The iconic images of 1950s civil defense demonstrated these duties, such as Bert the Turtle teaching children to "duck and cover" in the famous film of the same name and then go home after school and convince their parents to build a family bomb shelter. Part of the message directed at U.S. citizens was that the Cold War, like all twentieth-century wars, was a total war premised on total mobilization of the populace: civilians on the home front were no less exposed to attack than those serving in the military. As a result, citizens—including architects—also had to be convinced that they could serve their nation by preparing for war.

In some ways, this was little different from civil defense preparations in other countries during the Cold War. In a comparative international context, the U.S. response was not eccentric or extreme. Rather, the U.S. reaction during the Cold War was comparatively middle of the oad: less legislated than the welfare states of Switzerland or Sweden, or the command economies behind the Iron Curtain, which all *required* some buildings to include shelters; but more extensive than the response in, say, Canada and Britain, which seem to have taken civil defense with grains of salt. The U.S. experience *is* comparable to that in Britain and Canada in that, given the lack of actual building legislation requiring bomb or fallout shelters in any of these nations, the central strategy for civil defense officials was persuasion. U.S. officials went to far greater extents, however, to convince citizens and professional designers of the credibility and necessity of civil defense.[3] Studying the role of architects

and architecture in civil defense reveals the significance and seriousness of the U.S. government's agenda, and also where that agenda faltered owing to the professional, political, and economic contingencies of the American context.

This book explores the spaces of what much U.S. Cold War scholarship has come to define as "containment culture," in which foreign policy to confront communism globally was reflected in everyday social relations on the home front. According to this scholarship, for the good of the nation citizens contained their everyday practices within a set of norms prescribed by experts and professionals.[4] Of course, "containment" is not synonymous with incarceration and was necessarily imperfect; there were many ways that U.S. citizens resisted these norms, through action, appropriation, and apathy. At best, then, civil defense focused its goals on the modulation of everyday behavior.

My interpretation of architecture for civil defense is informed by Michel Foucault's notion of "biopower," a political relationship in which the state guarantees the welfare of the citizenry in exchange for their cooperative behavior. Foucault noted that the "atomic situation" represented a culmination of welfare planning: "The power to expose a whole population to death is the underside of the power to guarantee an individual's continued existence."[5] In this later work, Foucault proposed that the mandate of Enlightenment-era reform institutions such as prisons and hospitals gradually broadened to the scale of society. Diluted by their interface with everyday life, the carceral relations of the institution remained a partial model for the "imperfect panopticism" of the modern welfare state. Thus, what might be called a "society of modulation" bases its power on an underlying reference to the established institutions of the disciplinary society, which the state could resort to in times of crisis.[6] Architecture for civil defense was a medium for the imagination, design, and construction of spaces in preparation for a moment of ultimate crisis, nuclear war. At that moment when containment was most likely to fail, everyday practices would be suspended and replaced by the institutional relations of the fallout shelter. The representation of these spaces served to remind citizens of their duties to containment culture. In my analysis, Cold War civil defense was a discursive formation and spatial practice particularly well suited to representing the goals and powers of the welfare state. Civil defense in the United States achieved its highest standing during the 1960s when Presidents John F. Kennedy and Lyndon Johnson expanded social welfare legislation with the goal of creating "the Great Society."

Although civil defense never saved citizens from a nuclear war, its more immediate (if no more realistic) goals lay elsewhere. Duck and cover drills, urban evacuation exercises, and shelter construction and occupation studies modeled the spatial practices expected of all good citizens at all times. Like fire drills in schools today, civil defense practices taught proper behaviors for daily life: always listen for the alarm; react quickly; obey the authorities; queue up quietly; wait your turn; stay inside until you are informed what spaces can be reinhabited. In her recent study, theater historian Tracy Davis makes the important distinction that civil defense practices are characteristic of rehearsal, rather than performance; rehearsal establishes the possibility of performance. Civil defense scenarios, which took on the traditional structure of dramatic narratives, relied on "moments of resemblance" to reality to build consensus among actors regarding the applicability of their lessons.[7] Davis argues that the performative nature of Cold War civil defense indicates that officials strove for more than mere intellectual persuasion; they aspired to instill behaviors as well as beliefs. Through drills and exercises, civil defense trained a range of actors in bodily movements and memories that could be drawn upon in times of crisis—although the activities themselves occurred during times of peace and were inscribed on everyday spaces. Officials hoped that if civil defense was successful, then perhaps citizens would modulate their everyday behavior and social relations as well. Through "coded activities and trained aptitudes," what Foucault termed "docile bodies" might be produced.[8]

Davis's analysis of civil defense might suggest that architecture merely provides the impermanent stage sets for these momentary dramas. But as social theorist Henri Lefebvre has argued, space is not just a backdrop or container for actors and events. Rather, space is produced through performances and practices interacting with settings, over time.[9] As opposed to the more ephemeral modes of communication available to the state, architecture's materiality and permanence offered the additional possibility of framing habitual practices, of limiting the effective possibilities for everyday users of the built environment. Architects, then, were essential to civil defense because their expertise lay in transforming an ideal set of plans—or dramatic productions—into real buildings and landscapes. American Institute of Architects (AIA) president Philip Will claimed as much, speaking to an audience of architects and other guests at the height of the Cold War in 1962. According to Will, "Without well-designed communities man's very survival is threatened" by "thermonuclear holocaust."

He concluded that the "unique contribution" of architects to prolonging civilization was their ability to "translate a planned framework into an ordered physical world . . . where the dream becomes a reality."[10] Architects' expertise in making what Lefebvre calls "representations of space" (in which one should include the completed structure in itself, as well as its blueprints), could help the state colonize the spatial practices and lived experiences that are integral to the production of social space in a city or nation. To effect this production of space, architects would be some of the earliest converts: civil defense would be their mission.

In 1950, just as the Korean War prompted questions about the profession's role in civil defense, the *AIA Journal* reminded its readers that "the architects whom history remembers have often been great military engineers as well."[11] However, there was dissensus within the profession over the involvement of architects in national defense. Architects engaged in public debates about the utility of shelters and about the implications of a civil defense program for home front militarization. But much architectural resistance to civil defense participation focused on internal professional disputes over architects' proper role in society, and their responsibilities to the nation and to the world. Of particular concern to architects in their debates about civil defense were the dialectics of nationalism and internationalism, and of the mercenary practices of the profession versus its social embeddedness. Nationalist architects argued that civil defense was a potentially lucrative duty; their critics countered that socially conscious architects should focus on solving global problems. Both sides of the debate believed that their approach to shelter represented "good design" and good foreign policy.[12]

The present volume is the first sustained approach to Cold War civil defense through its essentially spatial character, and in light of its active and transformative effect on architecture and the architectural profession, on the production of meaning in the built environment, and on the formation of citizens. Some significant recent scholarship on the Cold War has targeted American architectural symbolism abroad and the progressive militarization of everyday spaces on the home front.[13] Other than these few studies, the Cold War rarely has been addressed by architectural historians. Conversely, the many critical cultural histories of the United States during the early Cold War have failed to address the politics of space, or the culture of architecture and urban planning more specifically.[14] Moreover, while cultural and political historians argue correctly

that the levels of public interest in, and government funding of, civil defense were driven by periodic Cold War crises, this book demonstrates that it is a mistake to look only at crisis moments and then conclude that the discourses and practices of civil defense at other times are ineffectual or, in particular, hold no meaning. Civil defense plans typically have been judged on their failure to save U.S. citizens from a nuclear war that never happened. Rather than the destructive atomic blasts that always threatened to proceed from a Cold War crisis, the story of civil defense is one of quiet implementation—not so much a history of events as a genealogy of the meanings taken on in association with specific spaces and discourses.

My approach challenges much architectural history by examining the intentions and activities of stakeholders who were concerned intimately with architecture, but were neither clients nor designers. I also provide a detailed analysis of the profession and its approach to *nonaesthetic* issues, such as public relations and ideological stances. Some prominent architects such as Albert Mayer, Perkins & Will, Clarence Stein, Victor Gruen, Gunnar Birkerts, and Charles Moore turn up on either side of the debates, or as professionals willing to participate in civil defense. But this volume foregrounds the practices and opinions of what we might call the workaday architects: those who populated the boards and committees of both the professional associations and the civil defense agencies, and those who hotly contested the very notion of architecture for civil defense.

Even though this research was inspired by 1960s buildings that look like bunkers, the study is not a teleological explanation of architectural style. This is not a history of the "bunker style," or of Brutalism, the term used by architectural historians who look to the aesthetics and architectural theories of European precedents and progenitors.[15] Rather, I argue that in specific Cold War contexts, Brutalism was just one stylistic mode for the formal expression of a more broadly defined "bunker architecture," which required alterations to plan and section, to siting, materials, and signage, as well as to the way that architects conceived of shelter and their role in providing it. That is, bunker architecture was a "discursive formation," of which buildings and architectural styles were components. I interpret the activities of designers, clients, and bureaucrats, as well as the reception of bunker architecture by a broader audience of citizens.[16] In addition to proposing *why* architects or clients might have made certain aesthetic choices, this study offers interpretations of *how* the implication of architecture in civil defense programs helped produce cultural meanings that accrued to buildings—and to the profession—during the early Cold War.

To paraphrase historian Michael Sherry, bunker architecture cast "the shadow of war" over its sites, participating in the militarization of social space.[17] This architecture represented and materialized a Cold War that often seemed distant from the everyday practices of U.S. citizens. But what I am calling a bunker architecture has never been recognized as such, at least not within the written architectural and political history of the United States. A bunker is a military structure designed both to protect its occupants and to command a field of fire; that is, the bunker's function is to control space, both interior and exterior. In deploying the bunker metaphor to describe ordinary public buildings, I intend to evoke both the material presence and the functional logic of this military structure. On a home front militarizing for the Cold War, the bunker architecture of the 1960s often was characterized by solid materials, deep protective overhangs, small dark window openings, and battlement-like details, but always by the twofold logic of protected interiors and outward aggressiveness.

The dual nature of the bunker—as both defensive and offensive—compares surprisingly well with the public buildings of the welfare state, with its mandate to both protect and coerce. As political theorist Murray Edelman has written, in the reception of public buildings, "reassuring meanings coexist with the meanings that evoke domination and inequality in everyday life."[18] Architecture for civil defense contributed material lessons and landscapes for a "society of modulation." Ultimately, I suggest that the bunker architecture of the early Cold War began a mode of fortress urbanism that continues to shape cities today. "Fortress urbanism" refers to the militarization of everyday built environments due to overriding concerns for security, whether national, corporate, or personal.[19] The rhetoric, techniques, and designs studied in this volume formed models for later architects and planners tasked with building security—that is, the security of individual structures but also the erection of a framework for the understanding of social space as both fraught with dangers and offering shelter to citizens.

I examine the discourses and practices of architecture for civil defense in seven chapters. The first two chapters differentiate the rationales and approaches to civil defense taken in the 1950s and the 1960s: in the earlier decade, civil defense promulgated a combination of individual bomb shelters and urban dispersal to counteract the awesome, though little understood, power of atomic weapons; in the later decade, the civil defense establishment admitted that people could not be protected from atomic blasts but only from their fallout. This change in strategy resulted

in the National Fallout Shelter Survey, in which architects and engineers examined the nation's entire built fabric to locate communal protection in existing buildings. The bulk of the book studies the decade following 1962, when architecture for civil defense experienced its greatest prominence, participation, and production of plans and buildings—a period, it should be noted, when civil defense had all but vanished according to most historians who date its demise to the defusing of the Cuban Missile Crisis in 1962.

Chapter 3 follows the path of fallout shelter survey data as it was utilized in Community Shelter Plans prepared by local and regional governments according to the best practices, and biases, of the urban planning profession. In addition, a significant concern of this planning process was researching and predicting the trials and tribulations of shelter occupation. The first and third chapters both explore in detail the urban and other imaginaries of civil defense in different historical moments. Later chapters delineate the strategies intended to provide these imaginaries with material specificity, physical data, and even built structures. First, though, Chapter 4 examines in detail how architects embraced, negotiated, and debated the opportunities offered by civil defense work. Tracing the civil defense activities of the AIA, this chapter shows that many architects in the 1950s and 1960s eagerly entered into these civil defense controversies as consulting experts but also that other architects resisted the profession's mobilization on the home front of the Cold War. The focus on public shelters reflected the rhetorical tendency in favor of an inclusive welfare state in 1960s U.S. politics. Regardless, the first four chapters show that in both decades, particular assumptions about the race, gender, and location of U.S. citizens ensured that civil defense plans reproduced the structures and relationships of power.

Since the survey and the plans discovered a shelter deficit in many communities—especially the new suburban communities of the postwar era—chapters 5 and 6 examine a series of architectural competitions, charrettes, publications, and awards programs intended to educate and persuade architects to design and plan for fallout shelter in new construction. These chapters reveal the development of a bunker architecture across these various publications and practices. Chapter 6 analyzes actual buildings constructed with fallout shelter, contrasting them with the significantly better protected Emergency Operating Centers (EOCs) that all levels of government in the United States were building for their own personnel. These chapters also address the apparent failure of the fallout shelter

program due to the many contradictions and ambiguities of fallout shelter design, the abandonment of proposed federal legislation to fund shelter construction, and the revival of resistance to civil defense as a component of a general culture of protest in the late 1960s.

Despite the manifest failures of U.S. civil defense planning, I argue that the partnership between architecture and civil defense produced a discourse about shelter and national security that both guided professional practice and laid a framework for interpreting the cultural meanings of public buildings. In chapter 7, a detailed case study of a single building is deployed to demonstrate how the discourse of architecture for civil defense framed the conditions of possibility for the production and reception of buildings during the Cold War. Built between 1962 and 1969, Boston City Hall's competition-winning design was then and has been since widely celebrated by reviewers and historians as the harbinger of a new form of architecture in the United States. Exposed, rough concrete inside and out, with dark cavernous openings and overhangs, Boston City Hall stood in contrast to the glass-box modernism that had become the architectural standard for public buildings during the 1950s. Boston City Hall was not designed to incorporate fallout shelter, but it nevertheless was interpreted both by civil defense officials and by critics of the building's bunker architecture as conforming to the ideals of the fallout shelter program. Indeed, it was marked and stocked as a fallout shelter with protective space for almost twenty thousand citizens. This concluding chapter, then, looks at the architecture of Boston City Hall in the context of the previous six chapters on architecture for civil defense, presenting a social and ideological interpretation of the case study building. The epilogue traces some of the legacies of architecture for civil defense in subsequent decades as Cold War strategies fluctuated, threats to the nation were reconfigured, and architects continued to devise strategies for sheltering citizens.

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1. HYPOTHETICAL HIROSHIMAS

City, Suburb, and Shelter in 1950s Civil Defense

"The hands of the clock on the south wall of Cooper Union stood out sharp and black against the worn red stone. Thirteen minutes after five." At that moment an atomic bomb explodes over the Lower East Side of Manhattan. Over an area

> where 100,000 people had lived—there was now an ugly red-brown scar. A monstrous scab defiling the earth. Somewhere in it, New York police headquarters, Wanamaker's store . . . and the famous arch of Washington Square were flattened beyond recognition.

Thus begins a special feature published in *Collier's* magazine on August 5, 1950. In recalling the frozen timepieces that recorded 8:15, that fateful moment exactly five years before (less a day) when the atomic bomb made its global debut, this opening line reinforces the connection made in the title of the article: "Hiroshima, U.S.A. Can Anything Be Done About It?" (Plate 1). As it turns out, "something can be done about it," according to a second article by that title in the same issue. In contrast to the urban devastation wreaked in this hypothetical attack, farther from ground zero, "out beyond the scar" or "that fatal circle of earth," the rest of the metropolitan region fared better. In this narrative, as with many others at the time, proximity to ground zero—or the city center—was a matter of life and death.

Hypothetical attack scenarios participated in an "imagination of disaster," to borrow Susan Sontag's term, to predict and shape what might happen to people and their built environments in moments of crisis.[1] Given the incomprehensible effects of nuclear warfare, its imagination was rendered meaningful through comparison with the familiar, such as the streets and structures people knew from their everyday lives. In particular, natural disasters provided a ready-made set of images, fears, and responses that could be deployed to explain the nation's new, complicated, and possibly dangerous role on the global stage.[2] A new, federally funded field of research in "disaster studies" provided scientific backing for the

metaphorical comparison. Social scientists and physical scientists attempted to extrapolate the behavior of people and infrastructure in natural disasters, to predict what might happen if the Cold War got hot, and to plan what could be done if it did. An intended effect of this comparison would be to naturalize the dangers of nuclear war, making them seem equally as inevitable, temporary, and survivable as the dangers of an earthquake, hurricane, or flood.

Architects had designed for the awful contingencies of natural disasters since the beginnings of the profession. To be sure, in their efforts to predict, plan, and control postapocalyptic environments, civil defense architects had little choice but to draw upon research data from natural disasters. To help construct the myths that nuclear war was inevitable and survivable, architects provided discursive, representational, and practical support for two main approaches during the 1950s: urban dispersal or atomic bomb shelters. Often the two architectural approaches to civil defense overlapped, with urban dispersal being the corollary of suburban shelter construction. Because hypothetical attack scenarios almost exclusively "targeted" city centers as the projected location of ground zero, these lurid narratives could be deployed in arguments for dispersal, and for the building of shelters in suburban communities that might be far enough "out beyond the scar."

Critics of civil defense were quick to note that shelter and dispersal plans tended to imply that certain survivors were more important than others. If civil defense discussions and proposals typically invoked an ethics of the "greatest good," this did not necessarily translate as the "greatest number" of citizens. For example, urban dispersal assumed a process of selection that was intrinsic to the definition of American national identity against a series of foreign and domestic "others." Architecture for civil defense "imagineered" spaces for an abstract citizen characterized as a white, male, patriarch—not surprisingly, an embodiment of the planners, researchers, and architects themselves. In home front fields of endeavor like architecture, urban planning, and civil defense, the call made by President Harry Truman and the political leadership of the United States to contain communism everywhere was interpreted broadly. In addition to disaster containment, civil defense officials were concerned to contain the assertion of any politics of difference, such as racial or gender identities that might challenge the purity of the abstract citizen. In an imagination of urban disaster and suburban survival, the fear of the bomb and the fear of the racial other merged at ground zero.

HYPOTHETICAL ATTACK SCENARIOS

In the United States during the early Cold War, a profusion of hypothetical attack scenarios like the one in *Collier's* targeted the home front and contributed imagery and information to postwar debates over the best forms civil defense might take. From 1945 to the early 1960s, the theme of nuclear apocalypse appeared in literary fiction, films, songs, and TV programming. The producers of these popular accounts relied on the experts for realism, as they projected blasts and their effects on American cities. In turn, these popular accounts provided the basic plot and imagery for the more official hypothetical attack scenarios regularly published in newspapers, magazines, and in government reports such as those by the Federal Civil Defense Administration (FCDA).[3] Hypothetical attack scenarios almost always were set in actual American cities, drawing on local landmarks, street names, and neighborhood character to lend themselves realism. For instance, *Collier's* paired contemporary photographs with speculative illustrations by artist Chesley Bonestell, contrasting scenes of everyday life with potential destruction at Washington Square, the Woolworth Building, and the Brooklyn Bridge (Figure 1.1). Its suspension cables snapped and dangling, its roadbed drooping in the East River alongside piles of smoking rubble, the melancholy Gothic arches of the bridge evoke the lost windows of a blasted church. Readers of the 1950s, so familiar with images of World War II bomb damage, would have associated the devastation of hypothetical attack scenarios with famous photographs of Coventry Cathedral, the denuded dome in Hiroshima, or of any number of other buildings or cities.[4]

Like most hypothetical attacks, the Manhattan scenario was not just made up; in fact, *Collier's* claimed that while "it may seem highly imaginative . . . little of it is invention." To produce a realistic narrative and solutions, the magazine had consulted numerous government officials and civil defense experts in all fields. It made sure its readers understood that

> property damage is described as it occurred in Hiroshima and Nagasaki, with allowance for differences between Oriental and Occidental standards of building. Death and injury were computed by correlating Census Bureau figures on population . . . [with] data on the two A-bombs that fell on Japan. Every place and name used is real.[5]

Similarly, extensive research characterized a hypothetical attack scenario produced by the Greater St. Louis Citizens' Committee for Nuclear

FIGURE 1.1. Brooklyn Bridge, before and after atomic attack, from *Collier's,* August 5, 1950. Illustration by Birney Lettick; reproduced courtesy of Gail Lettick.

Information (membership 650). The story plans in retrospect what could have been done in St. Louis neighborhoods to prevent some of the disastrous effects of the projected attack. Fictional, first-person narratives of a physicist, a doctor, and a housewife are used to describe, respectively, the effects of nuclear weapons, the number and types of casualties that would require medical attention, and the disruption of everyday family life. Their retrospectives are "written" from refugee camps in the relative safety of rural South Dakota. Still, the scenario was "not to be regarded as a work of imagination," since it drew on evidence presented to 1959 congressional subcommittee hearings on radiation, which called on a wide range of experts to describe life after fallout.[6]

Regardless of its provenance or purpose, a typical scenario would be composed of standard motifs. Quotidian tasks (hanging up the laundry, reading the newspaper) are suddenly interrupted by the explosion of a nuclear bomb, with ground zero almost always being in the city center. Extensive damage is detailed; human frailty is luridly described, with favorite maladies being shock, radiation burns, and irrational, selfish behaviors that prevent the authorities from maintaining order and beginning

rescue and recovery. Graphics contribute to the gruesome stories, with artist's renderings, photos of World War II bomb damage, and the ubiquitous metropolitan maps overlaid with concentric circles (Figure 1.2). Depending on the author's view of nuclear war, and the purpose of the particular scenario, the denouement would involve either the lingering death of all characters or the rebirth of civilization. In the latter case, this would be a civilization purged of the unworthy—or the unprepared, which amounted to the same thing. Judgmental, biblical binaries such as these were emphasized in particular by the civil defense establishment, which used the scenarios to persuade citizens to prepare for war. Despite their realism, these narratives were based more on sensationalism and propaganda than on facts or analysis.[7] Nonetheless, the scenarios stood at the core of civil defense planning. More than mere stories, they were serious, if flawed, projections of human and structural behavior in the aftermath of attack.

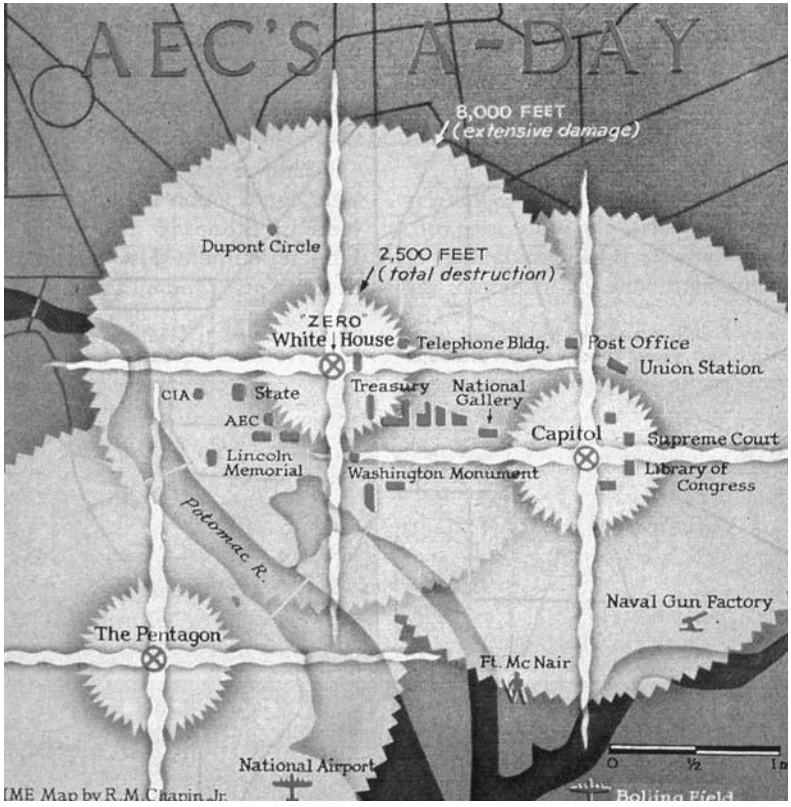


FIGURE 1.2. Atomic Energy Commission attack scenario on Washington landmarks, showing concentric circles of destruction. From *Time,* November 28, 1949.

URBAN AND SUBURBAN IMAGINARIES

American planners had been experiencing and imagining the destruction of crowded city centers for decades by the time they had to predict where bombs might land. Civil defense planners, like social reformers before them, viewed dense urban neighborhoods as spaces of unpredictable difference and nonconformity to the ideals of a white American republic. Typically, crowded, poor, derelict, multiethnic urban neighborhoods were destroyed in hypothetical attack scenarios. For example, the opening paragraphs of the *Collier's* story follow the footsteps of "a tall distinguished grayhead" who threads his way unsuspectingly down the road to ground zero. His mien contrasts with the intoxicated derelicts of the Bowery that weave across his path. No matter, in the next instant they are all vaporized. The derelicts that appear at the beginning of the article mark ground zero as a place of abjection; further paragraphs establish it as a place of racial difference. Our grayhead is buried under the rubble of, among other things, "the National Chinese Seamen's Union." A reporter surveying the aftermath from his apartment tower notes that "it was over the rooftops, far down in the direction of Chinatown, that he saw the worst of the disaster."[8] The Lower East Side, historically identified with immigrants and tenements, poverty and difference, is here eliminated for our entertainment and edification. In Detroit, civil defense planners imagined two ground zeros for a 1951 exercise, both of them in the heart of dense, African American neighborhoods (Figure 1.3). "Bomb Burst A" strategically avoids the industrial corridor of Highland Park and the white working-class municipality of Hamtramck, pinpointing a small corner of the black ghetto bordering the two districts. The necessary extent of destruction depicted on the map suggests, however, that atomic bombs might not be as discriminating as civil defense planners.

City centers increasingly became the domain of nonwhites and the poor beginning with nineteenth-century immigration and continuing with twentieth-century black migration from the southern United States. In response to the densification and marginalization of inner-city communities, a powerful and vocal urban reform movement developed in the late nineteenth century. These white, liberal reformers demanded a solution to the slum conditions they pathologized as hotbeds of disease and difference. While critical of poor housing conditions, reformers were particularly concerned to inculcate white, middle-class, American, family values among the teeming masses of immigrants and migrants.[9] The solution commonly

proposed was slum clearance—to demolish blocks of substandard tenements and replace them with rationally planned, hygienic, lower-density housing that conformed to reformist standards. By the early Cold War, this process of creative destruction came to be known as "urban renewal."

The imagination of atomic bomb damage often overlapped with urban renewal campaigns, suggesting that planners liked to envision a tabula rasa—or clean slate—on which more rational and controlled environments could be generated. The two programs were not unrelated in the minds of city administrators; a 1951 speech by the mayor of Pittsburgh was titled "We Do Not Want to Wait for Bombs to Clear Our City Slums." Clarence Stein was even more explicit about the defensive possibilities of slum clearance, as it could yield open spaces to serve as fire stops and evacuation lanes in the event of attack. The American Institute of Architects (AIA), as well, was vocal and insistent that rationally planned modernist housing was a necessity because "slums constitute one of the greatest potential dangers under any kind of bombing."[10] The notion of the tabula rasa had a particularly powerful hold on the imagination of modernist architects and planners influenced by the grand plans of, among others, Swiss architect and theorist Le Corbusier. His various plans for contemporary cities, published in the 1920s and 1930s, envisioned a flat, gridded open area, punctuated by evenly spaced, functionally zoned, identically articulated skyscrapers separated by parks and transportation routes.

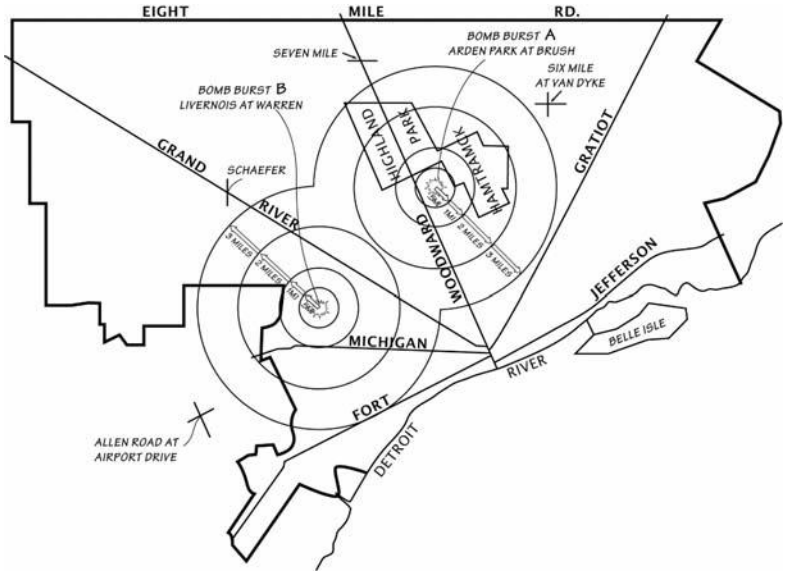


FIGURE 1.3. Detroit targeted in a civil defense exercise. From *Detroit News,* April 15, 1951. Published courtesy of *Detroit News.*

These visionary cities inspired similar plans for almost every North American municipality. The ideal of total reconstruction was familiar to Americans viewing images of postwar Japan and Western Europe, where, beginning with bombing raids during World War II, the United States lent a hand in programs of "urban renewal."[11] Like civil defense, then, urban renewal was based in a language and imagery of destruction and reconstruction.

In this context, planners and real estate developers could look back on a plethora of phoenix narratives in which American cities rose from the ashes of great conflagrations to maintain their commercial power in rebuilt downtown cores of modernized buildings and infrastructure. Nineteenth-century boosterists often claimed that these infernos were tantamount to a baptism by fire, marking their city's maturity and importance.[12] Likewise, atomic age cities could gauge their national stature in comparison to other potential ground zeros. If Washington, New York, and Los Angeles seemed likely targets, lesser urbs contended that they possessed significant landmarks that could attract enemy attacks, just as they attracted domestic business investment. Pittsburgh and Detroit had heavy industry; Minneapolis and St. Paul their transportation hubs; Memphis its chemical plants and inland naval base; Omaha its Strategic Air Command headquarters; Grand Forks its U.S. Air Force base. Atomic age boosterists did not compete outright to be listed by the Department of Defense as "target cities," but each local newspaper and civil defense office imagined their own town as the next Hiroshima.

Although it was almost always cities that bore the brunt of hypothetical attacks, there were, in fact, differences of opinion among defense intellectuals regarding possible targeting strategies. Some experts and editorialists argued that rather than bombing population centers, an enemy would target military, industrial, and infrastructural sites that might be suburban or even rural. Both arguments were borne out by evidence of World War II bombing targets. But cities were convenient targets for the legibility of hypothetical attack scenarios. Significant landmarks could be used to situate an audience in relation to the concentric projections of destruction. Just as the uniquely T-shaped bridge oriented the bombardier over Hiroshima, scenarios targeted the White House and Capitol Building in Washington, Washington Square in New York City, or perhaps a major crossroads or rail yard. "Downtown" also stood in for ground zero in generalized scenarios where the city was abstracted as a skyline. The dramatic introduction to the 1951 FCDA film *Survival under Atomic*

Attack shows footage of Hiroshima ruins and victims supplied by the U.S. Strategic Bombing Survey, before cutting directly to a familiar panorama of New York's skyline from across the river: "Our cities are prime targets," the narrator intones over a musical flourish. Similarly, an article in *U.S. News and World Report,* "Fringe Cities: Answer to the A-Bomb," was illustrated with stock photographs of New York, Chicago, Pittsburgh, and Detroit skylines—targets listed in the publication as "vulnerable." Skyscrapers like these, the article opines, "will no longer be built, if needs of atomic security are observed." In contrast, "suburban areas have new attraction."[13] A diagram used repeatedly in federal civil defense publications depicts the concentric patterns of destruction in a vertical section of skyline (Figure 1.4). The remains of tall buildings show ground zero to be downtown. A nonurban area to the right of the image is identified by the

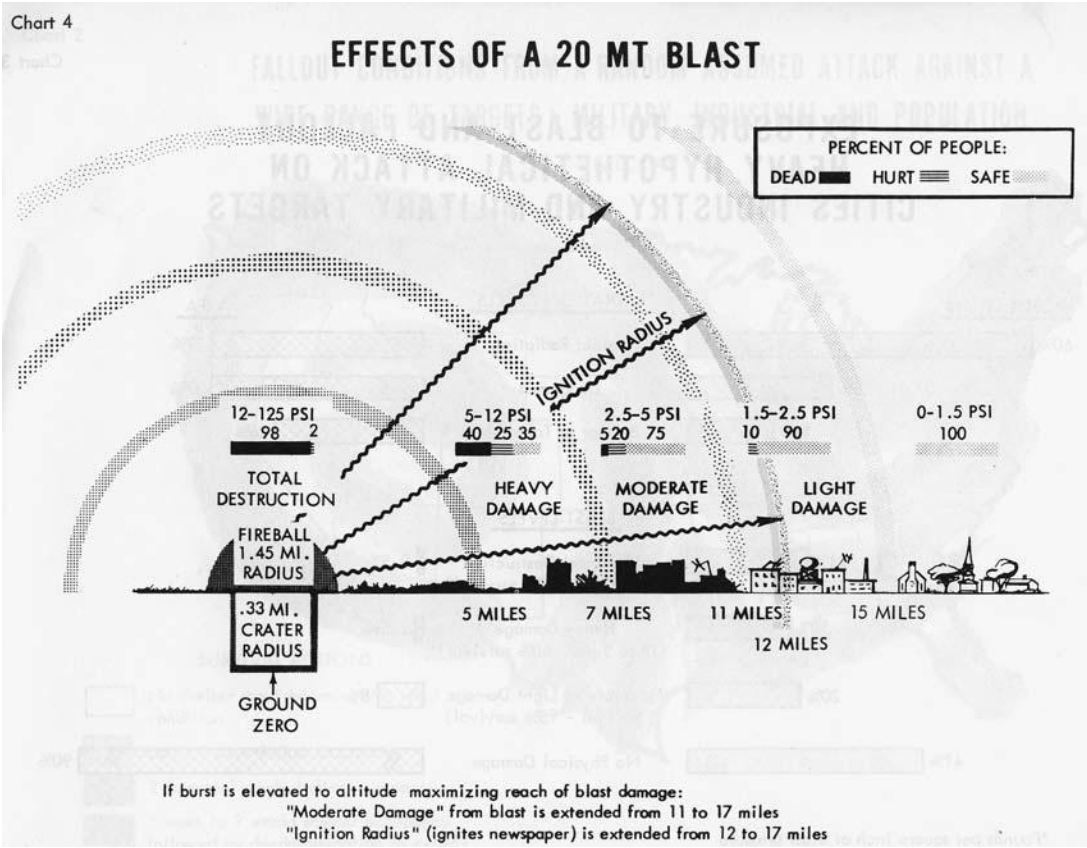


FIGURE 1.4. The hypothetical urban devastation wrought by a nuclear bomb. From Office of Civil Defense, *Highlights of the Architecture and Engineering Development Program* (Washington, D.C.: Government Printing Office, 1964).

lower height and density of its built-up area, its large trees, and its prominent church steeple. Differently shaded arcs rate areas from "total destruction" to the "light damage" projected for the suburbs, and the percentage of people "dead," "hurt," and "safe."

Graphically, the concentric circle radiating from the geographic center of a city map was already a familiar image from popularized understandings of organic urban growth. The Chicago school of sociology, and central-place theorists in economic geography, had deployed the graphic for their wide readerships. Within architecture and urban planning discourse, the garden city movement diagrammed satellite communities arranged radially in relation to an idealized center city. Growth models that saw the city expanding outward at its circumference were materially corroborated in the postwar United States. While some potential industrial and commercial targets remained in city centers, the 1950s saw increasing dispersal to the cheaper land and larger plots of the suburbs. New residential subdivisions and regional malls followed this dispersed manufacturing base. To maintain hope in the economic continuity of the nation, these suburbs had to be saved through civil defense preparations—and the hypothetical bomb had to land downtown.

Many architects and urbanists argued that the threat of atomic attack was a new impetus for urban dispersal, a long-debated, planned process for decentralizing cities into suburbs or satellites. If earlier calls for decentralization had reacted to the ills of the industrialized urbanism (such as congestion or pollution), Cold War dispersal discourse responded to the potential obliteration of the atomic age city. The AIA promoted urban dispersal for defensive purposes in board resolutions of 1951 and 1953.[14] That dispersal for defense merely reflected the trend of urbanism at the time was evident in a special issue of the *AIA Journal* that printed several papers from a 1950 Harvard symposium titled "New Towns for American Defense." Presentations by the well-respected architect and town planner Albert Mayer and others openly admitted that these "New Towns" were merely their old plans from before the Korean War, newly justified by the fear of atomic attack.[15] But the dispersal discourse and its implementation among building professionals proved convenient for civil defense planners.[16] Dispersal offered a body of established theory and practice that could lend credibility to parallel concepts in civil defense. The city center was to be rejected for any number of reasons; dispersal would result in new living environments outside the circumference of city destruction.

A key proponent of the defensive dispersal argument was Ralph Lapp, Manhattan Project atomic scientist turned urban crusader. As Lapp explained in "Safety in Space," his presentation at the 1951 AIA convention, he preferred the term "selective dispersion." Given the massive complexity and expense of the problem, pragmatic urban dispersal schemes should privilege the workers and infrastructure involved with essential wartime industries: they should be dispersed first. Similarly, Mayer advocated the dispersal of homes and businesses into what he called "company towns."[17] The well-known architect and planner Clarence Stein stated in his 1951 book on new towns that "the best policy for peace and for defense are the same: orderly, related dispersal of workers and working places."[18] Supporters of decentralization, though, drew on the threat of nuclear war much to the disgust of their detractors. For instance, Columbia University planning professor Charles Abrams noted that Lapp's proposal would "leave most of the people behind as sitting ducks."[19] Still, "selective dispersion" was typical of many civil defense plans in the early Cold War, which were contrived with similar lifeboat ethics.

The plans of Lapp and Mayer actually reflect the contemporary reality of industrial dispersal—those in wartime industries *were* dispersed first, and they went to what were all but company towns. As Ann Markusen and others have shown, high-technology defense contractors tended to employ an educated and skilled workforce predominantly made up of white men. Beginning as early as World War II, privately built residential suburbs were produced specifically for this military-industrial workforce, as in the burgeoning counties surrounding Los Angeles. The National Security Resources Board (NSRB) and the U.S. Department of Commerce in 1951 instituted a program (after consulting with the AIA about it) that favored dispersed industries for defense contracts, and offered incentives for new defense-related factories to locate on suburban or rural sites. [20] Moreover, the National Interstate and Defense Highway Act of 1956, partly justified as a means to evacuate targeted cities at the time of attack, ensured that billions of dollars would be spent on dispersal in the following decades.[21] The federal government and the military-industrial complex led the way into the postwar suburbs, and into the American Southwest, where new cities sprang up in decentralized forms. These newly built communities tended to be white, because only whites could get mortgages for the houses. Racist real estate practices, racial covenants, and organized white resistance often restricted nonwhite populations to older, inner-city neighborhoods with declining building stock.[22]

Associated with difference, neglect, or abjection, inner cities were targeted as places in need of drastic change.

In sum, urban targets made sense to civil defense planners for a multitude of reasons, few of them strategic. While civil defense planners strove for realism in their hypothetical attack scenarios, their political values structured their understanding of contemporary American "realities." For them, certain populations and parts of the city seemed more valuable to the nation; not surprisingly, civil defense officials saw themselves as members of the most valuable population. A white citizenry would survive on the fringes of the city where the effects of atomic bombs would be attenuated by distance from ground zero. Meanwhile, inner cities were places projected for the containment of nonwhite residents and other "sitting ducks" whose existence challenged the myth of a unified American identity in the 1950s. The unified America, the one to be preserved by civil defense preparations, was clearly imagined as a nonurban place; in contrast, the effects of nuclear disaster could be contained within the city limits.

THE BEGINNINGS OF COLD WAR CIVIL DEFENSE

The founding of the Federal Civil Defense Administration by President Truman and Congress in 1950 responded to specific, widely held anxieties about the potential reach of Cold War disasters. Although a U.S. Office of Civilian Defense was in operation for most of World War II, it was only seriously advanced in the first months after Pearl Harbor when fear of attacks on American soil was at its height. In fact, the office was disbanded a month and a half before V-J Day in August 1945. The outbreak of the Korean War, following closely on the Soviet Union's first atomic test, led to American fears of an "atomic Pearl Harbor."[23] Subsequently, public and legislative interest in civil defense rode the crests and troughs of Cold War fears and tensions. While certain historical moments brought civil defense to the forefront of national debate, the FCDA and its successor agencies continued to promote the mandate of preparation throughout the Cold War years. The Department of Homeland Security has inherited this legacy (Figure 1.5).

Civil defense in the early Cold War combined research into the effects of population bombing with aspects of disaster planning. The U.S. Strategic Bombing Survey paid close attention to the successes and failures of civil defense preparations in Germany, Japan, and Great Britain.[24]

Name of Agency	*Abbrev.*	*Location*	*Date*
Federal Civil Defense Administration	FCDA	Independent agency	1951–58
Office of Civil and Defense Mobilization	ODCM	Executive Office of the President (EOP)	1958–61
Office of Civil Defense	OCD	Department of Defense (DOD)	1961–72
Defense Civil Preparedness Agency	DCPA	Department of Defense (DOD)	1972–79
Federal Emergency Management Agency	FEMA	Independent agency	1979–2003
Federal Emergency Management Agency	FEMA	Department of Homeland Security	2003–

FIGURE 1.5. Federal civil defense bureaucracies.

Increasing media coverage and scholarly attention to natural and man-made disasters offered lessons for planning effective responses. Civil defense was always concerned with social welfare planning for the aftermath of crises: emergency rescue work, medical care, and mass feeding were central to its mandate. The fundamental task of architecture for civil defense was considering where citizens could be relocated or sheltered from the effects of these crises. Preferably, these spatial solutions would be realized before the disaster—or bomb—struck.

During the 1950s, the FCDA promoted a confusing array of approaches to spatial planning for civil defense.[25] In its first few years, the largest portion of its budget requests to Congress were for a proposed national public shelter program inspired by the experience of Londoners who sheltered together in Tube stations during World War II. But Congress repeatedly rejected funds for it. Up until the early 1960s, U.S. lawmakers continued to despise a group shelter program. First of all, the idea evoked fears of communistic living and state centrism to legislators operating in the era of McCarthy—it seemed like a massive expansion of the welfare state into the realm of private property and urban development.[26] Second, a national shelter program would have been expensive, and Congress had little confidence in the fledgling agency's ability to budget, plan, or put such a program into effect. The general disarray of the FCDA is indicated by the revelation—during congressional appropriations hearings—that the amount of $250 million annually for a national shelter program was arbitrarily chosen by the agency and its directors. No research or prior planning backed up the request.[27]

With no funding for public shelters, the best the FCDA could offer citizens was the advice to build their own shelters in basements or backyards.

Few citizens heeded this advice. For one thing, early federal civil defense publications lacked specificity regarding shelter construction, as officials struggled to impart basic information about atomic bombs and their effects. The most widely distributed civil defense publication of the 1950s, *Survival under Atomic Attack,* refers not to shelter construction but to the techniques of personal protection at the moment of the blast, which can be summarized by the iconic phrase "duck and cover." Shelter, when referred to in this document, meant the expedient shelter from shrapnel and flames to be found behind a low wall, in a culvert, or even in one's automobile.[28]

By 1953, the FCDA had decided upon a new emergency planning goal of mass evacuation, rather than shelters. Mass evacuation required the FCDA to envision suburban and farm families welcoming, housing, and feeding millions of fleeing city dwellers who themselves had managed to beat traffic jams on their way out of town after the warning sirens sounded. In fact, disaster researchers under contract to the FCDA were not so confident about this official plan. Interviewers were told by "some Midwestern suburbanites" that, in the event of a nuclear war, they would "get machine guns . . . to keep those city people from using up our children's food and water."[29]

Potentially negative attitudes toward urban evacuees would not end up mattering, though: no sooner had the FCDA established its new goal than evacuation was rendered irrelevant by the development of multi-megaton hydrogen bombs by the United States in 1952 and the Soviet Union one year later. Combined with rapid new technologies of delivery, H-bombs broadened the area of destruction far beyond the realistic range of evacuation. Moreover, by 1954 the implications of *fallout* as a newly discovered, geographically expansive threat became clearer to planners and to the general public (Figure 1.6). Fallout could be spread unpredictably by weather patterns more than thousands of square miles from ground zero, and its radioactivity could remain lethal for weeks or months. Since deadly fallout could occur anywhere in a large region, evacuation offered little safety. Evacuation also assumed an accuracy in bomb deployment rarely achieved to the present day—civil defense target prediction was an inexact science predicated on enemies hitting their targets. Despite these many shortcomings, the evacuation idea persisted until 1957. Meanwhile, suburbanization would, in effect, permanently evacuate millions of city dwellers to areas away from downtowns.

Safe from total annihilation, suburban areas would provide the ideal setting for fallout shelters. When the FCDA was replaced by the Office of

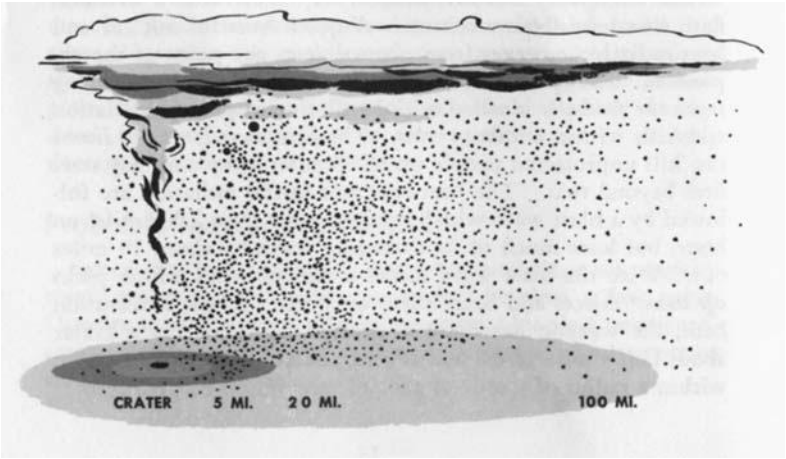


FIGURE 1.6. Concentric rings depict the severity of destruction, while clouds and particles indicate the spread of fallout at distances from ground zero of a nuclear detonation. From the widely distributed Office of Civil Defense publication *Fallout Protection,* 1961.

Civil and Defense Mobilization (OCDM) in 1958, backyard or basement shelters for individual families once again became the official line. Now, more was done to promote them than had been the case earlier in the decade. OCDM director Leo Hoegh addressed Americans in the afterword to a civil defense film, telling them that "no home in America is modern without a fallout shelter, this is the nuclear age."[30] Both government and popular publications offered plans, materials lists, and instructions for do-it-yourself construction, along with illustrations of white nuclear families inhabiting the home shelters they had made (Figure 1.7). Illustrations such as these modeled how, according to civil defense planners at least, family relations and roles would be reinforced by emergency preparations. Shelter building was shown to be an opportunity for father-son bonding, while females in the household were expected to keep the finished shelter clean and well stocked.[31] Planners' assumptions and desires about the realities of everyday family life were projected onto nuclear disaster scenarios. As contemporary polls and civil defense histories have established, however, few Americans ever built home shelters.[32]

One of the main problems for civil defense harks back to the cliché that armies are always planning for the last war. Even after the debut of the H-bomb, the FCDA continued to focus on blast effects. It viewed, and represented, nuclear bombs as just really big conventional bombs; only in the late 1950s did it and the OCDM begin to reckon seriously with the radically different effects of both initial radiation and long-term fallout. As a result, its rhetorical program of preparedness never came across to the public, or to the politicians expected to support it, as entirely honest or

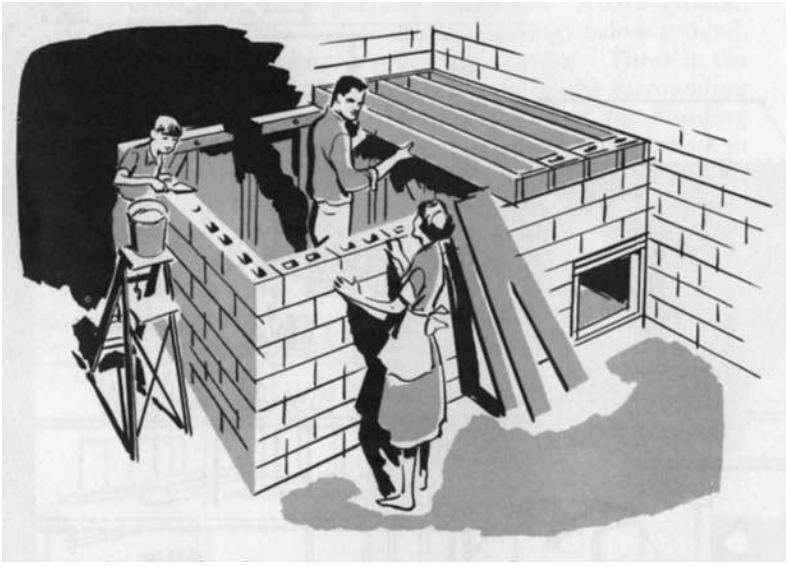


FIGURE 1.7. A family works on a basement fallout shelter: mother in apron offers encouragement while father and son perform manual labor. From Office of Civil Defense, *Fallout Protection,* 1961.

carefully considered. Throughout the 1950s, the FCDA and OCDM worked with small budgets, had little information about weapons effects from the top secret Atomic Energy Commission, and never really formed a national plan for civil defense. Without funding for a public shelter program, any plans formulated by the FCDA necessarily relied on individuals building their own bomb shelters or planning their own evacuations. It promoted self-help as the American way, as each individual or family would deal independently with disaster. The role of the FCDA was to map urban escape routes, train volunteer rescue workers, and encourage shelters for the home or workplace. But the government would not give financial aid or dictate what all Americans should do to protect themselves.

Overall, there were essential contradictions that undermined civil defense discourse and planning. On the one hand, FCDA officials stressed self-help; on the other hand, they portrayed themselves as experts who could be relied upon to protect the citizenry. Ironically, the government that created the FCDA often rejected the ideas of its own experts. If experts were integral to the formation of a Cold War consensus during the 1950s, as many scholars have argued, it is clear that they encountered dissidence on all sides. Historian Laura McEnaney points to several aspects of a deep-seated ambivalence about civil defense, which always straddled a fine line between using fear and fomenting panic, between self-help and state involvement, between "faith in the military, but skepticism

of its protective power."[33] There was faith in the wartime organization of society that had proved so fruitful for the nation and the economy during World War II. But could the militarization of everyday life really protect Americans from a future nuclear war?

DISASTER CONTAINMENT

President Truman put the nation on alert as early as 1947. The Truman Doctrine speech introduced to the public the Cold War concept of "containment," opposing Communist expansion on all fronts through economic and military means. In his famous "Long Telegram," which was used as a rationale for containment, American diplomat George Kennan argued that this policy should include the home front. Kennan was explicit about where to find and contain the diseased tissue within U.S. society that would betray the "health and vigor" of the body politic: in "labor unions, youth leagues, women's organizations, racial societies, religious societies, social organizations, cultural groups, liberal magazines, publishing houses, etc."[34] In essence, the many proponents of containment found in government, business, and other institutions saw threats emerging from any organization not dominated by the values of the free market, or of self-help, patriarchy, and whiteness.[35] Meanwhile, containment foreign policy entered the context of potentially devastating nuclear exchange when the Soviet Union tested its own nuclear device in 1949. From then on, regardless of one's position on international relations, domestic consensus, or civil defense, the possibility of an atomic attack on a U.S. city, first imagined by journalists in the hours following Hiroshima, became a "reality."[36]

Both Truman and Kennan used metaphorical language to indicate the threat of communism at home and abroad. As rhetorician Robert L. Ivie has shown, the president used disastrous rhetoric "to convey the ominous character of the situation confronting the United States."[37] Commentary that followed the speech engaged with motivating images of epidemic, flood, and wildfire, and with the concomitant concepts of prevention, maintenance, and control. These metaphors helped explain unfamiliar international relations strategies in terms of the familiar. If communism was to be contained, Americans would need to prepare for disaster on the home front. The language of disasters was adopted by civil defense and other experts to help citizens understand the effects of nuclear warfare, and the possibility that something could and must be done about it. Potential nuclear disasters were almost always described in terms of

natural disasters, whose effects presumably were familiar to all, even if an individual had not directly experienced an earthquake or hurricane.

The comparison with natural disasters would provide the foundation of facts and data necessary for realistic attack scenarios. It is within the context of planning for nuclear attack that a new field of scientific inquiry known as disaster studies was founded after World War II. Under the auspices of the FCDA and OCDM, the National Research Council, and other agencies, the government initiated and funded academic institutes and think tanks to conduct fieldwork, interviews, surveys, and exercises to determine the behavior of people and infrastructure in crisis situations. Unnamed Pentagon officials in 1957 called disaster studies "one of the most important defense efforts of recent years."[38] Building on the work of the Strategic Bombing Surveys after World War II, engineers, sociologists, and psychologists examined structures, interviewed survivors, and polled rescue personnel in the aftermath of natural disasters, hoping to find predictable—and controllable—patterns of action and reaction.[39] Disaster research was seen as a way to rationalize civil defense against the irrationality, or unpredictability, of both natural disasters and nuclear war. How would buildings or victims behave? Would buildings collapse? Would panic, looting, and other imagined effects of natural disasters occur in the wake of nuclear war?

Regarding human behavior, the social scientists who conducted disaster studies found themselves debunking many myths of panic, selfishness, and criminal behavior. Disaster victims interviewed told of an eerie calm, and the mutual aid of neighbors and strangers during the recovery period; looting was rare in test cases. However, disaster researchers had difficulty ensuring that their findings were correctly interpreted by the public or even by civil defense planners. For example, a detailed *Saturday Evening Post* article on the findings of the National Research Council Committee on Disaster Studies noted that "disaster victims tend to pull together, not apart . . . Class distinctions all but vanish. Even racial and religious prejudices dwindle." But in its conclusions the article still wondered whether "these hopeful aspects overbalance the colossal destruction and shock of an H-bomb." The disaster researchers themselves believed "it could go either way," but hoped that "our nation, though battered, would survive and fight on."[40] If civil defense officials shared those hopes, they still based their plans on the myth of panic and the need for strict social control, because these ideas structured their understanding of social relations. Cold War experts and government officials hoped to maintain the status quo both before and after an attack, making sure that class, gender,

and racial hierarchies continued to operate in the spaces of the nation. For example, civil defense planning was structured by gender, with level-headed men occupying management positions and burly men assigned to security details and doing heavy rescue work. It was imagined that women would perform duties of caring and feeding. Pathologized post-attack behaviors were also gendered; McEnaney has shown that "panic" was clearly understood by planners as a feminine trait that could be contained with masculine leadership.[41]

By grounding both metaphors and research in natural disasters, officials attempted to naturalize nuclear war and their proposed responses to it. This naturalization of nuclear war produced three significant effects during the early Cold War. First, nuclear war, like a natural disaster, was projected as *localized* and *survivable*—indeed, in most hypothetical attack scenarios only a few major cities are destroyed, allowing the rest of the country to perform civil defense rescue work and assist in the reconstruction of the targets. Second, war could be understood as *inevitable* at some point in the future, and perhaps even necessary for the survival of the nation, as in the phoenix narratives of American cities. Third, nuclear war was transformed into a force of nature that could not be resisted at the level of human discourse; a political solution could not be pursued through diplomacy, so the only recourse was preparation for the disastrous onslaughts described by President Truman.

If the comparison was intended to naturalize a national narrative of disaster and response, the very unpredictability of effects led to its failure. Current theorists think of disasters as "non-routine events" that can be understood, compared, and prepared for in reference to four "defining characteristics . . . (1) length of forewarning, (2) magnitude of impact, (3) scope of impact, and (4) duration of impact."[42] But in comprehending, describing, and planning for a nuclear attack, all these characteristics were in constant flux. At the time of the Soviets' first atomic test in 1949, Americans could be assured of several hours' forewarning before lumbering bombers made it over the North Pole and Canada to attack the American heartland. By the late 1950s, due to new technologies like the intercontinental ballistic missile, the standard window for evacuating or taking shelter had narrowed to fifteen minutes. At the beginning of the Cold War, Americans could have questioned the magnitude of bombs, in quantity and *kilo*tonnage, that Moscow might muster. Soon, civil defense planners had to deal with *mega*tonnage.[43] The growth of arsenals, and the mutual development of the hydrogen bomb, greatly increased the magnitude and

scope of impact. Radioactive fallout extended the duration of disaster, replacing the idea of immediate civil defense rescue work with the necessity of long-term sheltering. By the early 1960s, researchers in the *New England Journal of Medicine* would note that, due to the scale of nuclear war, and the duration of its effects, neither natural disasters nor previous wars were sufficient analogies. "Famine, slavery and plague might be more relevant historical social experiences," they argued, since they resulted in both acute and chronic problems.[44] Finally, recent disaster research in the social sciences has come to the conclusion that nonroutine natural events become "disasters" only in the context of the social. The scope and magnitude of the disaster are influenced by the social organization, demographics, and built environment of the affected community.[45] The producers of hypothetical attack scenarios had specific communities in mind when they plotted urban destruction and suburban safety. If there is little of "nature" in the effects of disaster, then the naturalization of nuclear war indicates similar inequities. Civil defense planners in the 1950s participated in the social construction of disaster by presupposing the vulnerability of inner-city neighborhoods with their older and denser building stock, while calling for the decentralization of industry and housing to safer suburban areas.

In their roles as civil defense experts, then, architects participated in the production of a particular reality in which nuclear war could be seen as a natural outcome of contemporary geopolitics. Even as architecture for civil defense strove to provide technological solutions for an attack deemed inevitable, it helped construct that inevitability. But the application of the natural disaster metaphor to architecture for civil defense was even more suspect than its use in human behavioral studies. For instance, describing the design issues related to blast protection for new structures, engineer Fred Severud and journalist Anthony Merrill erected a simile based on the most unstable terrain: "It is well to think of the problem as an earthquake in reverse. An earthquake shakes the building. A blast wave, on the other hand, takes hold of the earth by means of the building, and tries to shake the earth." How to quantify such powers, formerly limited to the gods? Despite taking the objective tone of a cost-benefit analysis, the authors admitted the "crudeness" of their quantitative and qualitative assumptions about the effects of nuclear attack.[46]

Architects attempted to extrapolate controlling design factors from predictions of targets and megatonnage. However, the selection of likely American targets was an augury based on prenuclear precedents, while data of destruction came from controlled tests of bombs much smaller

than those in U.S. and Soviet arsenals. An *Architectural Record* summary of a 1952 University of California–Berkeley conference, "Earthquake and Blast Effects on Structures," exemplified the speculative nature of nuclear planning and design. Following discussion of their arbitrary assumptions regarding the distance of a building from ground zero, its orientation to the blast, and their weak hope that "there must be an economic limit to the size of bomb," the presenters at the conference were forced to admit that for architectural design "the decision still depends on estimates of probability."[47] Ironically, nuclear war in the end remained very much like the natural environment, in the unpredictability of its effects. As an article on civil defense tests reminded architects, outside the building there was "no control over the disposition of fallout particles; they can be concentrated or dispersed by winds and rains."[48]

To be effective, architects for civil defense had to communicate the bomb's destructive power in language and imagery commensurable with the previous knowledge and experience of their colleagues, although nuclear weapons exceed both metaphor and materiality. As a result, the natural and nuclear disaster explicitly overlapped in the architecture periodicals, in articles and advertisements that suggested designs and products to contain both types of event. For instance, a 1954 advertisement for metal building panels asked architects, "Can your building resist earthquakes, great winds or bomb shock?" (Figure 1.8). Set below an image of a devastated small-town Main Street, the text goes on to offer protection against "external destructive forces." Architecture articles forecast survivability by relating it to a discourse of environmental control achieved through modern construction methods and building technologies.[49] The favorite comparison was earthquakes: civil defense architects continually called for all new buildings to be structurally designed for "earthquake" loading, even outside earthquake fault zones. Ultimately, as radiation replaced blast effects as a design driver, developments in mechanical systems like air-conditioning—which allowed a building to be sealed from its outside environment, perhaps for days and weeks of fallout—would show the way to a nuclear age architecture. In these uses, shelter from the elements took on a double meaning.

IMAGINEERING CIVIL DEFENSE

The positive assertion of *Collier's* magazine that "something can be done" about Hiroshima, U.S.A., was backed up by the description of a civil defense

Fenestra
50
YEARS
"A salute to those who made it possible"*
CAN YOUR BUILDING RESIST EARTHQUAKES, GREAT WINDS OR BOMB SHOCK?
Your next one can.
Fenestra has developed a method to increase the "lateral diaphragm" action of a building. Fenestra* Cellular Steel Floor Panels in combination with a correct welding pattern provide shear resistance to seismic forces of earthquakes and to excessive wind loads and bomb shock.
Exhaustive tests by Fenestra and independent consulting engineers in earthquake-experienced Southern California have resulted in predictable performance patterns and design formula values, approved by the Pacific Coast Building Officials Conference and now available in the Fenestra Building Panels Catalog to assist architects and engineers in planning your buildings.
Long-span Fenestra Cellular Steel Panels also provide structural floor and finished ceiling in one material, thus saving building time, labor, material and money. Mail the coupon for your copy of Fenestra Building Panels Catalog.
*Trademark
* Your need for protection of your buildings against external destructive forces encouraged us to develop a lateral diaphragm design using Fenestra Cellular Steel Panels.
Fenestra | METAL BUILDING PANELS
Fenestra Type B Panel floor with interlocking joints. Note the welding pattern.
Detroit Steel Products Company,
Dept. AF-7, 2296 East Grand Blvd.,
Detroit 11, Michigan
Please send immediately
the 1954 Fenestra Building Panels Catalog.
Name
Street
City
Zone
County
State

FIGURE 1.8. Advertisement for Fenestra metal building panels. Published in *Architectural Forum,* July 1954.

training school in the United Kingdom, where programs and techniques had been perfected during and after the London Blitz of World War II. Central to the U.K. training program was the role-playing of civil defense rescue operations, right down to gruesome injuries conjured with makeup and fake blood (Plate 2). Complemented as it was by a realistic stage set of crumpled buildings and rubble, the British school would directly inspire an American version. In 1952, the architectural firm McLeod and Ferrara was given a "unique assignment" for this project, known as "sample city" or "Rescue Street," and built in the placid Washington suburb of Olney, Maryland.[50] In "one of the oddest construction jobs in U.S. history," the architects materialized the projection of disaster effects. The buildings at Olney were designed and built in permanent "bomb-damaged condition" to serve as sets for the realistic training of civil defense rescue workers and planners from all over the nation. With the help of architecture, hypothetical attack scenarios could be played out in person. Adding to the "forceful

realism" of the structures, the architects designed ingenious hinged floor panels depicting collapsed stories, water pouring out of broken water mains, simulated live wires that gave a mild, instructive shock, and secret access hatches for the ingress of live "casualties" to trapped locations under the rubble (Figures 1.9 and 1.10). As at Olney's precedent, the wounds of casualties were rendered realistic by the application of garish makeup.

NBC television coverage of a civil defense exercise at Olney was meant to hit close to home. In it, the nationally known reporter Ben Grauer intones over images of the bomb-damaged buildings: "What if this was your street? . . . This is the architecture of nuclear war."[51] Drawing in the viewer, the show opens in the living room of a single-family home; an enemy airplane is heard in the distance before the scene cuts to a radar installation and then the interior of an FCDA attack warning center. Depicting the damage inflicted on "sample city," a (tediously) lingering view of a blazing high chair complements the melodramatic scene of a crashed school bus with lunch pails strewn about. Rescue workers—some of them women "who took time out from housekeeping duties to learn

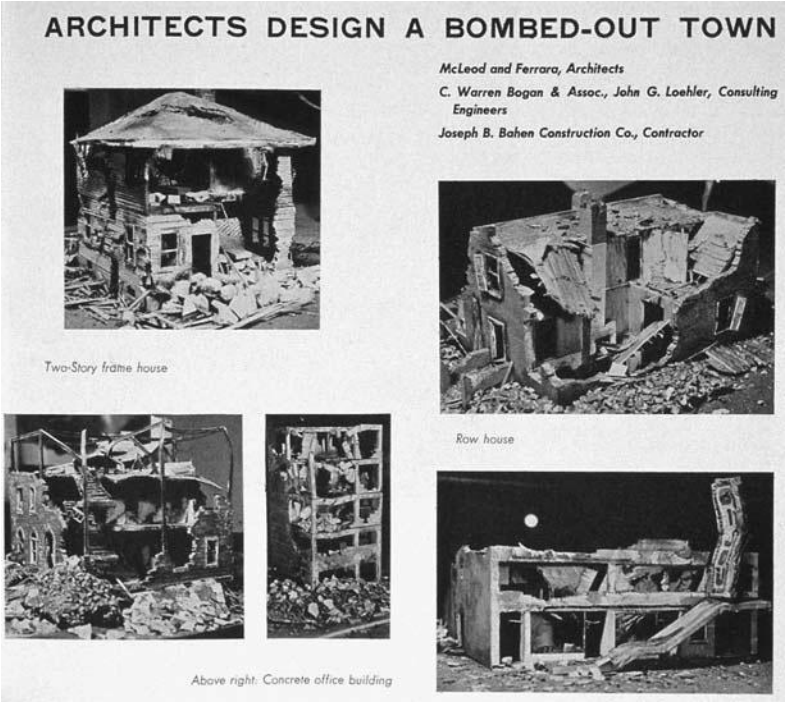

ARCHITECTS DESIGN A BOMBED-OUT TOWN
McLeod and Ferrara, Architects
C. Warren Bogan & Assoc., John G. Loehler, Consulting Engineers
Joseph B. Bahen Construction Co., Contractor
Two-Story frame house
Row house
Above right: Concrete office building

FIGURE 1.9. Architectural models for the civil defense training facility at Olney, Maryland. From *Architectural Record,* July 1952.

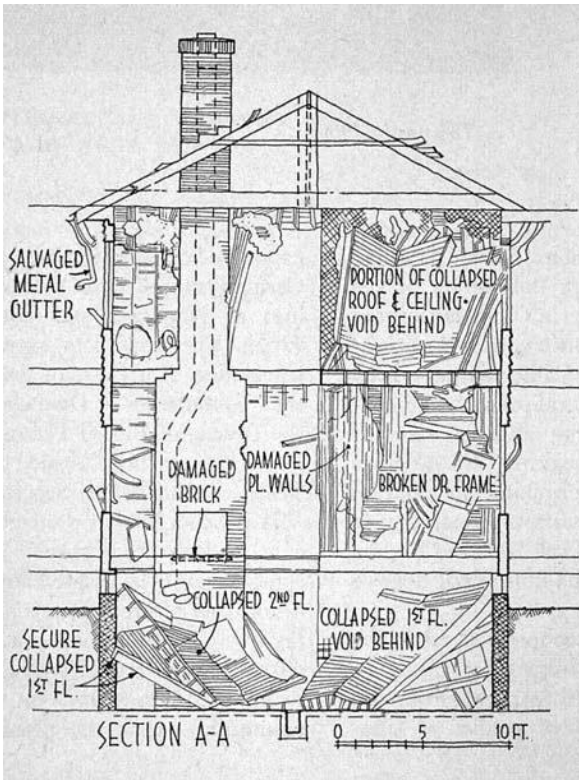


FIGURE 1.10. Section drawing showing spaces designed for the ingress of "casualties" at the civil defense training center, Olney, Maryland. From *Architectural Record,* July 1952.

civil defense"—extricate casualties from the architecture. In one scene, a white gentleman in a business suit is discovered under his desk in the rubble of the "office building" (Figure 1.11).

In addition to the low-rise office building, the set consisted of "a group of buildings typical of most U.S. towns—a store, a theater, two-story dwellings, apartments." Like the familiar streetscape depicted in the Fenestra advertisement, the building types in Olney indicated a quintessential American Main Street as the potential target of Communist aggression. This ingenious civil defense stage set is reminiscent of the themed environment of Disneyland—also under construction at this time—with its seamless entertainment experiences accommodated by subterranean passages and secret access doors for actors. Like Disneyland, Rescue Street evoked small-town America as the archetypal image of national identity (Figure 1.12). Moreover, both projects provided realistic, yet safe, simulated experiences of the street. But compared to Disney's "Main Street U.S.A.," Olney's "Rescue Street" represented rather morbid "imagineering." If, as

FIGURE 1.11. "Casualty" rescued by a civil defense worker during an exercise at the civil defense training center, Olney, Maryland. Photo no. 7-R-17; RG 397-MA; National Archives, College Park, Maryland.

architectural critic Michael Sorkin has argued, "the Disney strategy . . . inscribes utopia on the terrain of the familiar,"[52] then this "bombed-out town" does the same for atomic dystopia, devastatingly carved into the structures of everyday life, work, and consumption.

While the buildings of Rescue Street were not just suburban, single-family homes, neither were they meant to depict the city center. At Olney, the structures are meant to be typical buildings from the "damaged areas on the fringe of the completely devastated areas."[53] That is, Rescue Street marks the intersection between urban danger and nonurban safety. In

this conceptualization, presumably, towns and suburbs even farther out would remain capable of supplying rescue workers to the damaged fringe areas. As both metaphorical and physical space, the damaged small town within the landscape of rural Olney symbolically represents the redemption of the city in the countryside—an ongoing "rescue" operation, as it were. Moreover, in the context of 1950s evacuation plans, Rescue Street suggests that, beyond the fringe, refugees from atomic destruction or from the deteriorating slums of the nonwhite inner cities, could find reaffirmation of small-town American values like volunteerism and mutual aid. Since American cities would be "completely devastated," Rescue Street represented salvation.

Similarly, at the nuclear test site in the Nevada desert, FCDA planners gave up all hope for the city center, concerning themselves solely

FIGURE 1.12. General view of "Main Street, Sample City," Olney, Maryland. Photo no. 7-R-46; RG 397-MA; National Archives, College Park, Maryland.

with small-town symbolism and simulated suburbs. From the standpoint of architecture for civil defense, the most pertinent and best known of the "civil effects tests" were Operations Doorstep (1953) and Cue (1955). Everyday objects and buildings were situated at various distances from ground zero; their remains would offer material lessons about civil defense protection. The FCDA erected single-family homes on radii from the shot towers, peopled them with department store mannequins, parked cars in their paved streets and driveways, and stocked them with furniture and food provided by sponsors. They also installed various types of bomb shelters within and around the houses. Operations Doorstep and Cue were conducted under the scrutiny of the national media, for these were "open shots" meant for public relations and pedagogy. In Operation Doorstep, the implication was clear from the test's moniker that spectators on national television were meant to imagine the bomb's effects on their own front porches. As most of the media descriptions of Doorstep noted, the two traditional houses were in the New England Colonial style complete with ornamental green shutters: they were "two typical frame houses, looking prim and white among the yucca trees. Nearby a typical signpost read Elm & Main."[54] Could the typical house forms that sheltered the earliest patriots offer the same to atomic age citizens? Reporters seemed ambivalent, alternately naming the motley collection of newly built structures in the desert "Doom City" and "Survival City."

More accurately, they might have labeled them "doomed city" and "survival suburb." Ground zero for the kiloton devices detonated at Yucca Flats was the top of a five-hundred-foot-tall shot tower, but as in most FCDA plans, that point stood in for the center of any American city. Conforming to the concentric urbanism of civil defense, the residential architecture represented in 1950s Nevada test shots was always of the type found in suburban developments or small-town America—urban apartment buildings were never tested. In Operation Cue, the suburban disposition of the single-family homes was most explicit, with five pairs of test houses situated at increasing distances from the shot. Assuming, of course, that ground zero was downtown, the design of Operation Cue allowed comparison of the damage to be found in both first- and second-ring suburbs. Architectural styles tested in Cue included a one-story rambler or ranch style house, two-story brick Georgian and wood Colonial residences, and even a couple of modernist designs of concrete block and precast concrete panels. The correlation of typological and stylistic characteristics with protective capabilities was inconclusive, however.

In addition to the objective scientists of the Atomic Energy Commission and the FCDA, a whole series of self-interested industry organizations sponsored aspects of the civil effects tests in Nevada. For example, the National Clean Up - Paint Up - Fix Up Bureau (a propaganda arm of the National Paint, Varnish and Lacquer Association) deployed footage from Operation Doorstep to produce a civil defense film called *The House in the Middle* (1954). Clearly drawing on the sort of urban planning research that was used to justify slum clearance, the film demonstrates how, in contrast to the vulnerability of neglected neighborhoods, the tidy streets, yards, and living rooms of the middle class were spaces safe from the ravages of atomic urban renewal: "The house that is neglected is the house that may be *doomed,*" the narrator intones. Full-scale mock-ups subjected to the test blast "simulate conditions you've seen in too many alleys and backyards . . . *in slum areas.*"[55] Amazingly, the film argues for the protective qualities of a fresh coat of white paint, a color that reflects heat, even "a searing atomic heat wave." It is unclear whether the producers intended to draw a parallel between the whiteness of the paint and the preservation of a segregated, U.S. suburban society—Ralph Ellison had made the connection between paint pigment and skin color in his 1952 novel *Invisible Man,* in which the protagonist finds work in a factory producing the whitest possible paint for the federal government.[56]

Similar to the paint and varnish people, the National Lumber Manufacturers Association (NLMA) used the tests to argue strenuously that wooden structures could withstand bomb effects: "Reassurance to occupants of wood frame houses is afforded by the exceptional ability of wood to withstand shock without fragmentation, and the fact that most dwellings are built in residential areas, away from industrial zones at which an enemy will aim his bombs, and beyond the perimeter of shock waves of a magnitude causing total destruction."[57] The NLMA rather inaccurately continued to associate industry with city centers and of course assumed those city centers would be ground zeros. Even fire was not an issue for wood structures exposed to atomic explosions. The NLMA report uses time-stop photography to prove that the white paint (again) on the house closer to ground zero helped it resist "free flaming" for almost an entire two seconds between the bomb's flash and the blast wave that leveled the structure. The house farther from ground zero retained its "integrity as a house," despite severe damage. Even though a *National Geographic* writer may have observed that the "dwelling's back [was] broken," the NLMA researchers affirmed that the house was still standing.[58]

At whatever distance from ground zero, it seemed, single-family homes made from wood, synonymous with home ownership across large swaths of the United States, still could be reassuring in the atomic age.

If the farthest houses from ground zero proved to sustain damage without losing their integrity, it was less clear how human beings would fare in the same situation. The FCDA did its best to find out, short of experimenting on human subjects. As *Life* magazine noted in its report on Doorstep, the agency's "seeking after verisimilitude produced another bizarre, in fact grisly, touch: the distribution through the houses of a dozen or so plaster mannequins . . . representing various scenes of domestic felicity."[59] In one of the first official uses of something approximating crash test dummies, the FCDA populated its test houses with well-dressed, white "nuclear" families (clothing donated by J.C. Penney). In before and after photographs printed in the reports and disseminated throughout the media, smiling mannequin families caught unprepared for attack—say, dining with friends or spending quality time in the living room—were "tossed into wild contortions," missing limbs and large plaster chips (Figures 1.13 and 1.14). Since windows were blown out at long range, shards lacerated even the most suburban mannequins who failed to heed the sirens and take shelter. In test houses with bomb shelters, the mannequins were better off—a reinforced concrete bathroom shelter remained intact while the wood frame house around it was destroyed, its roof landing one hundred feet away. As the NLMA report noted, due to its lightweight wood structure, this house collapsed in such a way that a "simple" basement shelter could "be adequate to prevent bodily injury" and allow residents to dig themselves out of the debris. Overall, civil defense officials remained hopeful that the "Americans" inside shelters would have survived. That is, those worthy citizens who had the foresight to build a shelter, and to use it.

As McEnaney argues, the tests were less scientific experiments than they were "morality plays" that "defined who and what was endangered by the atomic age."[60] What was threatened were the white nuclear families, their suburban homes, and the consumer culture they embraced. There were no nonwhite mannequins blown up at Yucca Flat. Like other characters in civil defense dramas, white mannequin families represented what civil defense planners of the 1950s believed to be the bedrock of American national identity. That is, the absence of nonwhite mannequins reflects the conflation of whiteness with national identity. Critical race theorists have argued that the abstract citizen, in order to be conceptualized as holding

FIGURE 1.13. Mannequins prepared for Operation Doorstep. Photo no. CPZ-1-10; RG 304-NT; National Archives, College Park, Maryland.

equal rights within liberal democracy, must be devoid of any particularities of its material conditions, such as class, gender, or race.[61] Whiteness, especially its masculine and middle-class form, represented the default condition of citizenship. Since general conclusions were drawn from the "experiences" of the mannequins and hypothetical attack victims, they were understood as abstract, universal subjects.

Ultimately, the imagineered spaces of civil defense, informed as they were by architectural and social "realism," provided design data for dissemination to architects. The mannequin families of Nevada lived on in the measured drawings of shelter construction in civil defense publications and architecture journals. For instance, in a technical report on Operation Cue, *Architectural Record* depicts a white family of three enjoying some quality time around the battery-operated radio in their basement shelter. In the foreground sits the crew-cut father, protecting the entry as it were; behind him, mother wears a dress and high-heeled pumps; their son seems to be smiling, knowing that their shelter was built according to

FIGURE 1.14. Mannequins who ignored the warnings of civil defense officials were buried in the debris of destroyed single-family homes. Photo no. HA-10; RG 304-NT; National Archives, College Park, Maryland.

data scientifically determined on "Doomsday Drive" at Yucca Flats (Figure 1.15). To the right, construction specifications detail the mixture of concrete and steel reinforcement required to keep this shelter intact under blast conditions. Technical drawings like these attempt to control outcomes; they represent architectural expertise geared toward replicable results, wearing the mantle of objectivity. Inserting a white nuclear family into this graphic context endows the figures with an official aura. The

family type, with its racial and gendered aspects, seems to be specified just like the thickness of the concrete.

Illustrations for shelter design tend to mimic those in *Architectural Graphic Standards,* a popular handbook first published in 1932 to standardize the visual language employed by modern architects, so that their drawings could be understood globally, like scientific diagrams. Architect Lance Hosey has critiqued *Graphic Standards* for its portrayal of gender- and race-specific bodies as if they were representative of the entire population: "Because architecture traditionally has been a restricted profession, its standards of practice have been written by and for a narrow demographic . . . *Graphic Standards* may be read as a guide for white men to create buildings for themselves in their own image."[62] In their space planning for atomic shelters, architects drew on experiments conducted on military personnel and combined the resulting data with a long history of assumptions that specified the needs and desires of the universal subject. Another *Architectural Record* article, "Design for Survival," included images from a U.S. Navy study on minimum space requirements for fallout shelter inhabitation (Figure 1.16). Nearly identical, outlined figures, without defining particularities or features, sit at tables and benches, or bunk down for the night; the white pages on which these images are printed betrays the racial content of the universal subjects represented. The provenance of the research in the armed forces of the 1950s precludes that anyone but males were considered in the study. This narrow demographic

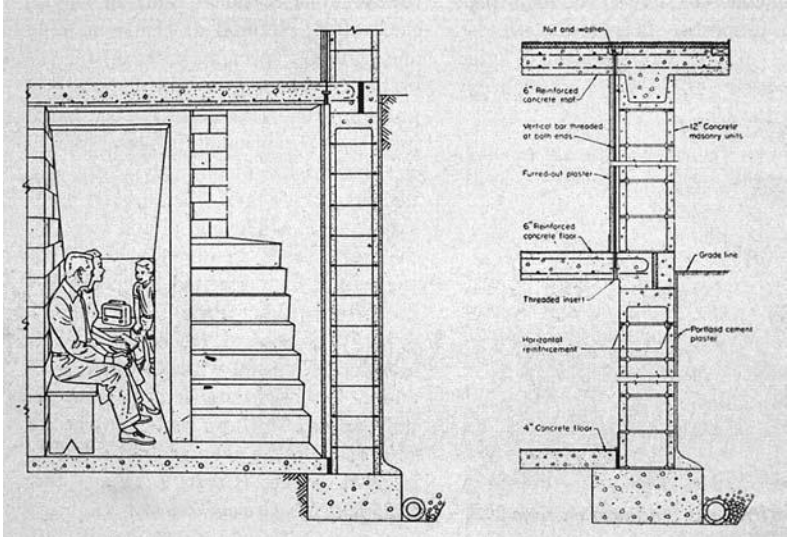


FIGURE 1.15. Perspective and structural section drawings of a family fallout shelter, based on those used in the Nevada tests. From *Architectural Record,* September 1955.

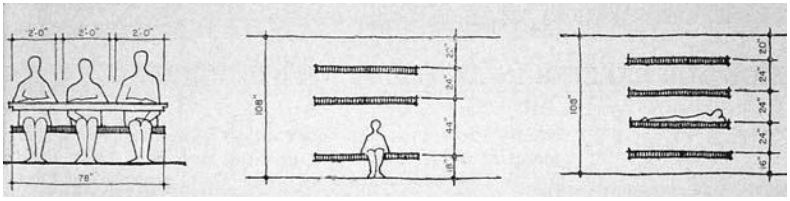


FIGURE 1.16. Minimum space requirements for fallout shelter inhabitation, based on studies conducted by U.S. Navy. From *Architectural Record,* January 1962.

recurs in the texts of civil defense, and for the same reasons: the race and gender of civil defense planners. Here the architectural discourse forms a microcosm of national discourse: the "restricted profession" parallels restricted citizenship; more sinister, the white male is imagined as the most necessary survivor.

CONCLUSIONS

Sociologist Dean MacCannell argues that the civil defense establishment in the early Cold War believed that the worthy and prepared people who would survive a war to rebuild the nation were those "who are closely in touch with the unique spirit of America . . . [and not] people who never much benefited from American society, or quite understood what America was all about, that is, by people who lived at a disadvantage on the margins of society."[63] Many who lived on the "margins of society" were situated in the city center, which, according to MacCannell, would "absorb the impact" of nuclear war. The architecture profession, in developing its expertise in civil defense, contributed to the definition and construction of these centers and margins. In imagined selective dispersal, the anticipated disaster of nuclear war dovetailed nicely with discourses of suburb and city—of decentralization and slum clearance—already well established in the architectural profession. The white male subjectivities of architects structured their imagination and design of these Cold War environments.

The bureaucrats and professionals associated with civil defense took up much of the diction and imagery of popular culture portrayals of atomic attacks. Visions of slum clearance and the nuclear annihilation of the city center overlapped at ground zero. The desire for a slate wiped clean of history and politics—of the physical evidence of unequal access to the privileges of full citizenship—parallels the conceptualization of an abstract citizen devoid of social markers. Alongside natural and nuclear disasters, inner-city residents assumed roles of antagonism to American culture and a unified identity. Architecture—in its construction of inside

and outside, of shelter from "external destructive forces"—was essential to this discourse of the other. Echoing Kennan's "Long Telegram," the executive director of the AIA, Ned Purves, warned architects in 1950: "We are facing not only enemies without, but also enemies within."[64]

When viewing the ubiquitous government films and publications that promoted civil defense in the 1950s, one would never be exposed to the potentially divisive aspects of U.S. social relations. Imagineered by architects and other experts, civil defense plans continually reinforced the whiteness and patriarchy of the nuclear family as the crucible of ideal citizens. The purview of architecture for civil defense extended from the bodies of victims and rescuers to the performance of built structures, the devastation and renewal of the city, and ultimately to the spaces of the nation. At different scales, the profession of architecture contributed to the social containments that seemed so vital to national security during the early Cold War. Although many architects resisted the militaristic implications of the atomic age, new design problems offered prominent roles for members of the profession who were concerned with its identity and status. In fact, their greatest role in civil defense was yet to come. In claiming to provide "shelter for all," the public fallout shelter program that the new Office of Civil Defense would develop in the early 1960s was partly a response to criticisms of the problematic plans just discussed. As such, architects would need to embrace the new collectivist language of a burgeoning welfare state. Not that racism ended in 1960, but changes in social relations, in civil rights legislation, and in the approach to civil defense required inclusive language and the imagination of city center survivors.

2. SURVEYING THE COLD WAR LANDSCAPE

The National Fallout Shelter Program

> Most Americans will be surprised to learn that many of the buildings in their own communities could serve as shelters during an emergency.
>
> **—OCD film *Protection Factor 100* (1962)**

A man dressed in a silver radiation suit raises a protective hand against the orange glow of a hypothetical nuclear blast; a headline, in a large white and yellow font against the black background, announces that this issue of *Life* will reveal "How You Can Survive Fallout." In this famous issue of the magazine from September 1961, President Kennedy directly addressed his "fellow Americans" on the subject of survival, telling them: "there is much you can do to protect yourself—and in doing so strengthen your nation." The president's letter, superimposed over the image of a mushroom cloud, articulated what many Americans increasingly feared at the time, namely, that there was a pressing need to protect themselves from the possibility of nuclear war. Outlining his foreign policy goals as the "security of our country and the peace of the world," Kennedy concluded that "in these dangerous days when both these objectives are threatened we must prepare for all eventualities. The ability to survive coupled with the will to do so therefore are essential to our country." To this end, the magazine included do-it-yourself home shelter designs culled from existing civil defense publications, and illustrations of the everyday family life that could be maintained in shelters. According to these images, in fallout shelters fathers would still light cigarettes like they did every evening as mothers tucked children into bed; personal grooming would not be neglected, and bows would still adorn the hair of little girls. In support of the president, *Life* revised its earlier opinion of survivalists: "The man down the street with a backyard shelter was considered odd. But he is actually a solid, sensible man—and a responsible citizen."[1]

This individualization of the response to the threat of nuclear war was modeled on 1950s civil defense discourse. But the sensational imagery

of white nuclear families spending quality time in the shelters they built should not distract from the fact that in this issue of *Life,* Kennedy introduced citizens to a new "national goal" of "fallout protection for every American." This new goal marked a shift in federal civil defense policy from *private,* backyard and basement shelters to community shelters in *public* buildings. It applied to civil defense the language of civil rights that characterized many government programs of the Kennedy and Johnson presidencies. In this period, it becomes clear that civil defense distilled the essential goals of the welfare state—it imagined the welfare state achieved, because after a nuclear war that would be the only state possible. Kennedy's letter to citizens, and the accompanying images and articles in *Life,* continued to promote self-help as a short-term solution to fallout protection. More significant, though, the president also described long-term plans to stock emergency supplies, to create a national attack warning system, and, above all, to carry out a national survey of the fallout shelter potential in existing public buildings.

According to a second *Life* editorial in the fall of 1961, public shelters could be surveyed or designed to resist anything but a direct hit; to be remote from ground zero in this way was a "hope that all Americans may rightfully entertain, except those who live in the largest metropolitan centers."[2] That is, urban populations, typically nonwhite in the American imagination, did not possess the same rights and hopes with regard to where they might seek shelter. Even as the focus of civil defense shifted from individual to national solutions, from private to public shelter, it remained clear that the program was addressed to citizens who possessed certain racial and geographic characteristics. When *Life* magazine warned a few months later that citizens must erect a "modern stockade" to "guard against dangers infinitely magnified above those of the marauding Indians,"[3] it drew on a historical narrative of white national identity. Historian Tom Englehardt has argued persuasively that stories of nonwhite treachery, especially Indian sieges and ambushes of Puritans and pioneers, have played a central role in defining an American "self" against threatening "others," a role that continued into the Cold War.[4] The image of citizens defending themselves against "marauding Indians" was a metaphor deployed repeatedly in debates over civil defense (Figure 2.1), often in conjunction with an argument in favor of fallout protection for "every American." At these discursive moments, it becomes clear that not everyone was considered a citizen.

Life did maintain, though, that "prudent steps" could be taken in urban areas, especially in their "business centers," but also inner-city residential neighborhoods. Office and apartment buildings, and other large

structures, offered much potential fallout protection.[5] The cover painting for a subsequent issue of *Life* depicted a public fallout shelter built below a freeway overpass on the edge of a dense downtown (Plate 3). A cutaway view of the two-story shelter reveals crisply made quadruple bunk beds, walls painted in a calming institutional green, and a large number of well-dressed white people lounging about as if they were at a party. Perhaps the projected suburban survivors of 1950s civil defense plans soon would be supplemented by their urban compatriots—at least the white ones in this city shelter. In fact, the new approach to civil defense did seem to suggest that planners no longer were convinced that the city center would be ground zero. The basic premise of *fallout* shelter is that the explosion of the nuclear bomb must occur elsewhere; there is no need to protect people from radiation if they were already vaporized at ground zero. As historian Kenneth Rose points out, Department of Defense (DOD) simulations of Soviet nuclear war strategies changed at this time: where countervalue strategies previously were assumed, targeting citizens and cities, counterforce strategies targeting military sites now became the basis of predictions.[6] If cities no longer were targets, then they needed fallout shelters.

Beginning in 1961, the National Fallout Shelter Survey became the backbone of U.S. civil defense planning. The survey would identify appropriate public fallout shelter spaces in existing buildings in all U.S. communities. The American Institute of Architects (AIA) worked closely with the newly formed Office of Civil Defense (OCD) to develop the architect's

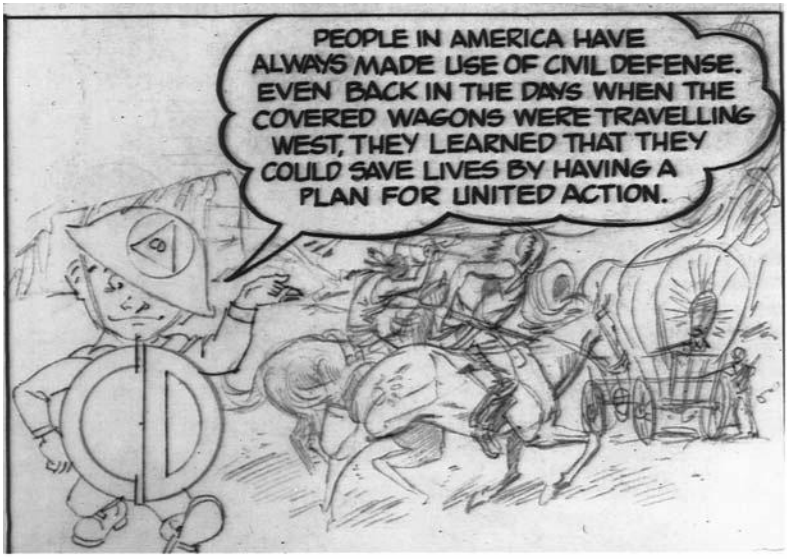

PEOPLE IN AMERICA HAVE ALWAYS MADE USE OF CIVIL DEFENSE. EVEN BACK IN THE DAYS WHEN THE COVERED WAGONS WERE TRAVELLING WEST, THEY LEARNED THAT THEY COULD SAVE LIVES BY HAVING A PLAN FOR UNITED ACTION.

FIGURE 2.1. "Mr. C-D," a character created by Al Capp in the mid-1950s. Photo no. 9-C-5; RG 397-MA; National Archives, College Park, Maryland.

role in the newly prominent fallout shelter program. The survey's inauguration marks the moment when architects became key players in Cold War cultural politics. By conducting the survey, and by engaging in other projects with the OCD, architects participated in both the discursive construction of the threat and the formation of a national identity necessary to confronting it. In the process of producing a national solution to the threats of fallout and social disintegration that would accompany nuclear war, architects—like other defense intellectuals—defined these dangers in ways that suited their professional interests and approaches.

POLITICS AND HISTORIOGRAPHY OF 1960S CIVIL DEFENSE

If threats to the U.S. home front during the 1950s remained mostly domestic, cultural, and, indeed, rhetorical, then the successive international crises that characterized the first two years of the Kennedy presidency introduced dangers that seemed far more immediate and material. Indeed, the OCD would later acknowledge that during the Cold War crises of the early 1960s, the "changes came rapidly . . . [from] hypothetical danger to actual threat."[7] The summer of 1961 witnessed a resurgence in public concern and political discussions regarding civil defense in the United States. From the outset of his presidency, Kennedy had promoted fallout shelters, first hinting at a national program in a speech on May 25. Meanwhile, he had also taken to the role of Cold Warrior, standing up to his Soviet counterpart, Nikita Khrushchev. International relations deteriorated after a June 1961 summit between the two leaders. On July 25, in a speech to the nation that described the Soviet Union's intentions to cut off West Berlin, the U.S. president outlined his determination to maintain the Allied occupation and support of that city, even if it meant nuclear war. In this same speech, Kennedy committed the government to a nationwide shelter survey. In its inauguration, then, the survey was a rhetorical and strategic move meant as a demonstration to the Soviets that Kennedy was firm in his posture. The following month, this Berlin crisis prompted two significant moves on the part of the Soviet Union: the erection of the Berlin Wall and the resumption of nuclear testing, both of which seemed particularly threatening to American leaders and citizens.

A new emphasis on public shelter was appropriate to the political tone of the Kennedy presidency. In contrast to the Republican individualism that characterized both civil defense and concepts of social welfare during the Eisenhower years, the liberalism of the Democrats would draw

upon a vision of community and civil rights that culminated in President Johnson's program for the Great Society. This political shift would finally establish the rhetorical and functional framework for civil defense to be incorporated as an aspect of broader social welfare planning at a national scale. In promoting his administration's approach to the welfare state, Kennedy turned to intellectuals, especially defense intellectuals, to renew U.S. culture through the design and implementation of federal programs.[8] Redefining the approach to civil defense along these lines, psychiatrist Charles Fritz of the National Academy of Sciences Disaster Research Group argued that planners "must stop thinking of American society as if it were simply a collection of individuals or families who are individually responsible for the defense of the homeland. The realistic unit of administration and management in a nuclear attack is the nation as a whole."[9] Nuclear war, like any social problem, could be administered and managed. As such, the nature and meaning of civil defense in the 1960s can be understood in the context of what historian Godfrey Hodgson defined as "the liberal consensus," a feeling of "national unity" in reaction to the threat of "an enemy at the gate." More specifically, Hodgson itemized the aspects of the consensus as "a natural harmony of interests in society," regardless of class or other divisions, made possible by the United States' unique "free-enterprise system," that resulted in seemingly unlimited growth of the economy. Because of this growth and harmony, "social problems can be solved like industrial problems: The problem is first identified; programs are designed to solve it, by government enlightened by social science; money and other resources—such as trained people—are then applied to the problem."[10] Civil defense planning conformed to this fervent belief that, with a rational approach—guided by experts like architects, and government agencies like the OCD—problems need not become crises and that the exceptional, consensual character of American society would ensure its continuity in the face of the worst disasters.

Recent histories of the Cold War have shown that the liberal consensus was hardly consensual. For instance, as represented by civil defense planning, the consensus did not include minority populations seen as less able to access the essential characters of American identity. Further, in the 1960s, civil defense plans and policies were as vigorously contested as they had been during the previous decade. President Kennedy's rhetoric and actions in the summer and fall of 1961 sparked a vigorous debate among politicians, the public, and architects over the effectiveness, cost, and strategic value of fallout shelters.[11] Commentators in the press worried that a

fallout shelter program might provoke war by seeming to prepare for it; others argued that shelters would deter nuclear attack. Some said that fallout shelters could save millions of lives; others wondered about the millions more who would perish. A critique of the OCD's program, published in *Life* only a few months after Kennedy's letter, laid out many of the points of contention in the debate over shelters: Was a survey of existing buildings a sufficient response to a mortal threat? Could fallout be "isolated and dealt with apart from the other grave dangers that would accompany any large-scale attack"? Was fallout an equal threat for all communities and "every American"? *Life's* editorial in this issue concluded that fallout shelters were merely insurance, not deterrence: "Under certain ghastly circumstances, they *might* save millions of lives—and the nation." While a shelter program was necessary—and indeed *Life* felt that the OCD was not going far enough—it was important not to transfer money to civil defense from conventional military defense budgets. The best defense was a good offense, the United States' "capacity to retaliate."[12]

In addition to strategic questions about their use or effectiveness, some Americans were concerned over the ethics of fallout shelters. In Kenneth Rose's history of the shelter debates, he concludes that the American public rejected fallout shelters because they recognized the moral dilemma posed at the shelter door: among other things, when the shelter reached capacity, would occupants lock out others? Other historians of civil defense assume that, after Kennedy's brinkmanship resulted in the removal of Soviet missiles from Cuba in October 1962, the public lost interest in the shelter question as détente reduced the material threat of nuclear war. That is, after the missile crisis, citizens once again became apathetic and the circuitous and contradictory debates about civil defense died off. Common to all these arguments against the continuing significance of civil defense was its *relative* lack of funding after the OCD's salad days of 1961–62.

However, none of these histories account for the significant amount of money and effort expended on civil defense after 1962. Given that it mostly conducted surveys, provided advice, offered continuing education, and distributed publications, appropriations to the OCD were on a par with other small programs and departments of the federal government.[13] It is true that the OCD never received funds for a Shelter Incentive Program, which would have disbursed money to private building owners for the additional costs of including fallout protection in their construction projects. In this, government fiscal commitment to the actual construction of fallout shelters paralleled the *actions* of its constituents, rather than

their *words*. As with other social welfare legislation of the 1960s, there was strong rhetorical support (and support of rhetoric) from legislators and the public, but minimal appropriation of tax dollars for structural transformation. Nonetheless, legislators did assign funds for many other civil defense programs throughout the 1960s, not least of which was the National Fallout Shelter Survey.

Moreover, while Americans were unwilling—or, more likely, unable—to open their pocketbooks to build their own private shelters, they overwhelmingly claimed to support a federally funded fallout shelter program throughout the 1960s. For example, in a national study conducted in 1964, social scientists from Iowa State University found that 83 percent of those polled thought it desirable that the government "pay part of the cost of putting fallout shelters in buildings . . . such as hospitals and schools," and 85 percent still believed there should be "fallout shelters for all Americans."[14] A Columbia University report published similar findings: 60 percent "generally favored shelters"; 75 percent favored them "if the Federal or state governments would underwrite the costs." This study found variation in support for a public fallout shelter program to be dependent on levels of Cold War anxiety, which in turn depended on social characteristics. For example: "The wider horizons of the young, the greater responsibilities of the married (especially of parents), and the disabilities of womanhood combined to aggravate fears of war."[15] Further, when the researchers analyzed polling differences among nine communities, support for public shelters was related to the socioeconomic status and the ethnic and class composition of each community. "Traditions of mutual help" among ethnic "subgroups" in the study "apparently" led to the finding that "sizable minorities of Jewish, Negro, and Italian-Americans . . . especially tended to favor community over private shelters" (17). Overall, approval for civil defense and fallout shelters was stronger in the "working-class towns." The most significant finding was that public shelters were

> more likely to be preferred by persons whose class positions were congruent with the class character of their communities, and they were less likely to be preferred by persons who by virtue of class position are in the minority in their towns. Like apparently would rather take refuge with like. (16)

Rather than ethical qualms, apathy, or rational assessments of fallout shelter functionality, most individuals interviewed had not built private shelters because of cost, lack of space, lack of property ownership, or lack of "immediate danger." The Columbia report concluded that "opposition to

shelters was definitely the minority sentiment in early 1963—and strong opposition was even less in evidence" (18).

In fact, historians can only conclude that the American people rejected fallout shelters, or that civil defense disappeared, because their studies end with the Cuban Missile Crisis. By such a periodization, they choose to ignore some 670,000 fallout shelter signs (153,000 exterior; 520,000 interior) that punctuated a paranoid U.S. urban environment by 1966; by 1969, even more signs marked more than 100,000 buildings and 104 million individual shelter spaces, of which 94 million were stocked with provisions.[16] Although begun at a moment of crisis in 1961, and largely complete by 1963, the survey was nevertheless updated annually into the late 1970s, détente or not.[17] Despite the peaks and valleys of Cold War crises, the OCD effectively ignored the public debates and proceeded with the National Fallout Shelter Survey and related programs.

Looking back from the vantage point of 1969 on the fallout shelter debates of the Kennedy years, the OCD was somewhat smug and condescending toward its former critics. The controversy, read the OCD annual report, had

> tended to concentrate on the intent of the program rather than on its capability, as there was not any real nationwide shelter capability to talk about at that time. The discussion also was characterized by arguments made from a point of view of extreme absolutes—the proposed program was much too much or it was not nearly enough.
>
> Despite the apparent lack of precision in the debate, it afforded the Congress an opportunity to examine the issues in depth . . . The Defense Department was then in a position to develop a base for carrying out the program in an orderly manner over a period of years.[18]

The language used here is interesting: yes, there was a debate, it suggests, but once the facts were known, and examined in depth, clear heads prevailed. As a result, the DOD had proceeded methodically to implement a reasoned civil defense program. And by demonstrating its *capability* to shelter citizens, the government hoped to bypass debates about the strategic, ethical, or political intent behind the program.

PREHISTORY OF SHELTER SURVEYS

The upswing of concern over civil defense during the Korean War revived the interest in surveys of existing buildings seen briefly after Pearl Harbor. In the early 1950s, the Federal Civil Defense Administration conducted a

series of thirty experimental field surveys. At the same time, public works departments or local volunteer groups of architects and engineers completed a few independent surveys. The AIA publication *Civil Defense: The Architect's Part* argued that such commitment should be national, with each AIA chapter assessing every building in its area—with "an architect to be in complete charge," of course. This work would include "the preparation of maps indicating the type of structures, their vulnerability, and the daytime and nighttime population and occupancy, topographical characteristics, utilities and communication facilities."[19] The surveys would extend the responsibilities of architects into the realm of comprehensive urban planning, at that time a nascent profession. Moreover, shelter surveys were reminiscent of the surveys of building stock often completed in U.S. cities prior to slum clearance, thus placing them in the realm of projects purporting to advance social welfare through creative destruction of the urban fabric.

Little more was done with public shelter surveys of existing buildings until later in the 1950s, when the new Office of Civil and Defense Mobilization (OCDM) recognized both the futility of urban evacuation, and the disinclination of homeowners to build their own shelters. As a first step, the OCDM funded pilot shelter surveys in the nation's capital cities, research that would later form the foundation of the National Fallout Shelter Survey. Private architecture firms conducted the pilot surveys, and the OCDM requested that their reports specifically reflect on costs, the research process, and techniques of data management, making recommendations for future surveys. The pilot survey of Montgomery city and county, Alabama, by associated local architects and planners, discussed issues that would soon confront civil defense officials, such as the fallout shelter gap between urban and nonurban areas, and the confusion of building owners over the program's implications for the public use of private property. Because protection was best in more substantial buildings, pilot surveys found a surplus of fallout shelter space downtown, as in Tulsa, Oklahoma, where the contractors combined the survey with their city planning process for the central business district. Professionals with urban planning credentials, such as Robert E. Alexander of the architecture firm Neutra & Alexander, which worked on the Tulsa plans, argued for the importance of integrating the goals of civil defense with the long-range plans they hoped cities would hire them to produce.[20]

Working from pilot research such as this, the OCDM developed a pair of guides explaining fallout shelter surveys to architects, engineers,

and municipal decision makers. The AIA was asked to review drafts of the two guides, and they were sent to a large mailing of select architects and engineers for commentary. A few architects responded directly to the OCDM, protesting the very idea of fallout shelters and prefiguring the controversy soon to erupt within the AIA. But the general complaint among architect respondents was that the structural and shielding calculations were too complex for nonengineers.[21] Indeed, the survey guides ultimately were published with simplified math, while more complicated structural calculations were reserved for a separate engineering manual.[22] Despite these seeming blows to the scientific status of architecture, the fact that architects were requested to review the publication before its release reflected the focused lobbying of the various AIA committees and staff throughout the 1950s, which had established the profession in the position of expert consultants to government. The final version of this publication, *Fallout Shelter Surveys: A Guide for Architects and Engineers,* was distributed free to all members of the AIA, though it is impossible to know whether this nondescript document—produced as typescript on newsprint, with no illustrations—competed successfully for their attention in a mailbox filled with glossy journals and trade publications. Nevertheless, the architects who did attend to the *Guide* were well positioned with knowledge that would soon form the basis of the National Fallout Shelter Survey.

The guides described three phases of a fallout shelter program pertinent to architects: *evaluating* and *improving* fallout shelter space in existing structures, and *incorporating* it in new buildings. Architects were a natural choice for this work, at least according to Lyndon Welch of Eberle M. Smith Associates, an architectural firm that had researched school and skyscraper shelters for the OCDM. In his summary of the OCDM guidebooks for the AIA Committee on Safety in Buildings (coincidentally submitted the day after Kennedy's announcement of the national shelter program), Welch concluded that the "three phases require a knowledge of construction, a talent for organizing space, and an understanding of the techniques of protection."[23] In Welch's formulation there is an echo of the ancient Vitruvian triad: architecture as the sum of *firmitas, utilitas,* and *venustas.* In the context of the Cold War, these are now translated as *firmness, commodity,* and . . . fallout protection? If *delight* is missing from this equation, it is clear that architects in the postwar United States were searching for new ways to accommodate the profession to the demands of a technological society.

As was seen with the guidebook reviews, however, many twentieth-century architects could only claim a circumscribed technical knowledge. Often, the complex structural calculations and dynamics of materials that might make a building stand firm against atomic bomb effects were lacking from their education and experience. And while fallout shelter certainly required the skillful and commodious organization of space, it was difficult to imagine a designer making it delightful. Finally, as the OCD later explained, the National Fallout Shelter Survey was not a construction program "in the normally accepted meaning of that term but rather a systematic fact-finding process."[24] That is, it was perhaps better suited to the skills of urban planning professionals who were trained in social science methodology to perform surveys, assemble data, and map metropolitan uses. However, the AIA was particularly keen to advance the architectural profession in the realm of research, and a scientific survey of buildings seemed like a good place to start. To the AIA's exceeding pleasure, civil defense officials apparently agreed.

Architecture journals had begun calling for a national survey conducted by architects several months before Kennedy announced the initiative. The most vocal editorial stance was taken in *Architectural Forum,* not coincidentally a journal that shared its owner and "editor in chief" with *Life* magazine: noted Cold Warrior Henry Luce, who, incidentally, had given the keynote address at the AIA's Centennial Convention in 1957. In "Fallout Shelters at Once," *Forum* associate editor David Allison wrote: "Probably there has never been a time in history when the need for architects and engineers has been so critical (and so unrealized on the public's part)." Emphasizing the expert status of architects, Allison drew on fellow defense intellectuals, colleagues in the social sciences, to argue that group shelters solved not only the problem of individual apathy but also the potential postattack issues of isolation and insecurity in family shelters. The experts had a responsibility to alert citizens to the dangers of fallout, to "move forward" with "local survival programs" even "without daring to wait for public approval."[25] This was a mandate both architects and civil defense officials would take to heart in their implementation of the fallout shelter program.

Many architects and other Americans were not merely apathetic or ignorant of the dangers of nuclear war, however. They were ardently opposed to the general premises of both fallout shelters and civil defense. For instance, responding to Allison's editorial stance, Boston architect Henry Heaney decried the concept of "building caves to crawl into at the

sound of the siren." With atomic weapons, he argued, we "can no longer even *entertain the possibility* of war." The editors of *Architectural Forum* appended a note to Heaney's letter, dismissing his pacifistic opinion as "sentimentalism" and "surrender." According to *Forum,* critics of civil defense like Heaney refused "to protect even the innocent young, consigning them to the alternative possibilities of mass murder or enslavement . . . by the well-shelter-protected Communist dictators."[26] This bitter, and rather melodramatic, ideological exchange foreshadowed the debate about fallout shelters, and about the nature and significance of architects' involvement in civil defense, that would spread to the other architecture journals and to the boardroom of the AIA in the coming year.

Given the controversial nature of civil defense, officials always were careful to note that the OCD surveyed and enacted a system of *fallout,* not *blast,* shelters, in existing buildings—a source of confusion then, as now. *Fallout shelter* was only for that portion of the population lucky enough to survive the initial explosions, firestorms, and radiation burst of a nuclear attack. The danger from fallout is merely the residual radiation of the days and weeks following an attack. At the time, Assistant Secretary of Defense for Civil Defense Steuart Pittman explained in the *AIA Memo* (a newsletter for members) that blast shelters were not impossible, just impractical and uneconomical. Therefore, the rationale for nationwide fallout protection was

> based on four propositions: 1) Fallout is understandable to the public and manageable in the national economy; 2) Fallout patterns show that, regardless of attack location or method, a significant portion of the population can be saved through fallout protection; 3) If shelters against blast and heat were built, they would cost far more but the enemy would still have the option to attack less protected areas; 4) Very short or no warning periods are available under close-range submarine missile attacks and there will consequently be few survivors from blast. Those remote from blast effects still have time to reach fallout shelters.[27]

This apparently coherent list raised more questions than it answered, as architects and civil defense officials would soon find out. First of all, predicted "fallout patterns" were merely DOD soothsaying about Soviet strategy and North American meteorology. And, since the DOD now readily admitted that nuclear weapons would leave few survivors within the radius of "blast effects," most citizens continued to believe that nobody could be saved without a system of deep underground blast shelters. Fallout, it

seems, was not particularly "understandable" to professionals or to the public, many of whom found it difficult or distasteful to disaggregate radiation from blast effects, a theoretical presupposition necessary to understanding the program.

When civil defense planners openly admitted that there was no practical protection from initial blast effects, they routinely wrote off the first one hundred million or more U.S. deaths. Fallout shelters were nevertheless meant to offer some form of comfort to Americans. Overall, the program was largely rhetorical, a locus of meaning in the Cold War, where U.S. citizens could understand and become comfortable with their roles in the global conflict. Although the fallout shelter program met with fiscal restraint from federal legislators, with resistance and ambivalence from the general public, and with technical and ethical criticism from professionals, the OCD—with the help of building professionals—managed to blanket the nation's buildings with its trademark fallout shelter signage (Plate 4).

NATIONAL FALLOUT SHELTER SURVEY: POLICY AND PROCEDURES

With public attention focused on emergency, home front preparedness, Kennedy established the OCD within the Department of Defense. This gave civil defense the benefits (and detriments) of military organization, the full range of expertise among DOD personnel, and the status associated with national security responsibilities. In particular, Secretary of Defense Robert McNamara would take the position that a national, civilian, fallout shelter program was an essential counterpart to ballistic missile defense, because the latter assumed a large-scale nuclear attack from the air. Even if missile defenses were successful—which was far from guaranteed by the DOD—radioactive fallout still would be a nationwide problem. The OCD embarked on the National Fallout Shelter Survey with a great deal of optimism that grew out of the bureau's new structure, status, and level of funding. Government appropriations for civil defense rose dramatically in 1961–62, money that paid for most of the initial survey. To civil defense bureaucrats accustomed to the 1950s marginality of their mission, its recasting as the counterpart to ballistic missile defense within the nation's security posture was intoxicating. DOD officials repeatedly chastened the OCD, emphasizing its subordinate standing in relation to the armed services. Nevertheless, the OCD gained access to the resources of the DOD: classified information; military test sites like Fort Belvoir,

Virginia; research monies; and, not least, the design and contract management proficiencies of the Army Corps of Engineers (COE) and the Navy Bureau of Yards and Docks.

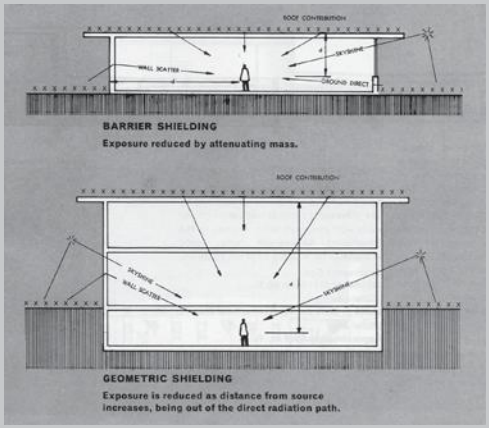
With the initiation of the survey, the OCD faced a gargantuan task in establishing policies and standards; training architects and engineers; setting up hierarchies, contacts, and work flows among agencies, especially the COE; and publicizing the procedures so that building owners and communities would cooperate with surveyors. The National Fallout Shelter Survey was realized in three phases. In Phase I, architect and engineer contractors gathered information about the existing structures in their areas through windshield surveys and studying building permits, plans, and fire insurance maps. The data were used to calculate potential shelter capability and capacity in each building. Sometimes brief site visits or interviews with building managers were needed to clarify information, but detailed interior inspection was reserved for Phase II. In addition to these architectural inspections, which marked the completion of the architect and engineer contracts, the second phase also encompassed the licensing, marking, and stocking of accepted shelters. Finally, Phase III comprised an annual update of the data, and local planning for the use and distribution of shelters.

Proper training of architects and engineers would be crucial to the success of the program, and courses began as early as spring 1961, prior to the presidential announcement of public shelter policy. First of all, training sessions would indoctrinate potential contractors with the rationale of the program, and prepare them to handle questions from property owners and design clients. Office of Civil Defense–certified analysts were listed in an inventory distributed to local civil defense officials and other interested parties. The analysts also received all OCD publications related to the fallout shelter program, from information bulletins to technical design manuals and slick booklets illustrating award-winning buildings incorporating fallout shelter. Therefore, the analysts were meant to serve as conduits of information to the profession on matters related to civil defense and design for survival. In the first year of the program, almost 3,000 professionals became certified fallout shelter analysts, approximately 1 percent of all architects and engineers in the United States. The number of analysts grew to 17,500 by 1969, even though a summer student program had taken over the survey fieldwork.[28]

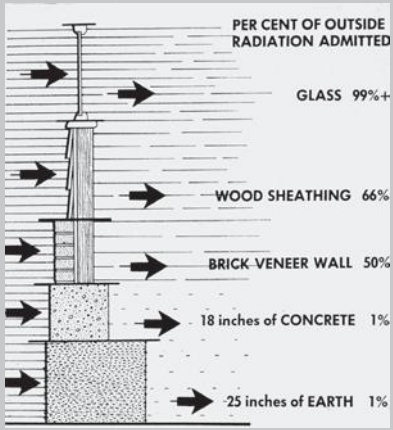
The courses detailed procedures and techniques of fallout shelter analysis. To accomplish Phase I of the survey, fallout shelter analysts were

FALLOUT PROTECTION

Images like these from civil defense publications formed the basis for how fallout shelter capability was determined. Fallout is depicted by X.


BARRIER SHIELDING
Exposure reduced by attenuating mass.
GEOMETRIC SHIELDING
Exposure is reduced as distance from source increases, being out of the direct radiation path.

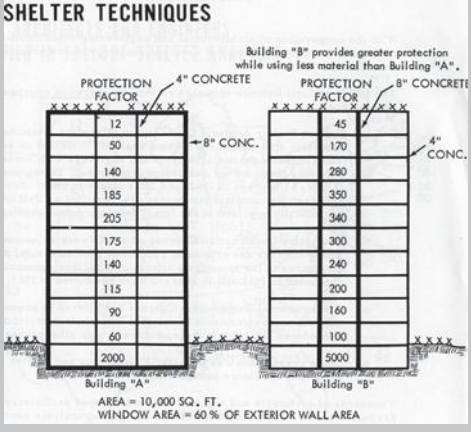
The fallout shelter available in a space was predicated on two main variables: mass and distance, which the Office of Civil Defense translated into barrier and geometric shielding, respectively.


PER CENT OF OUTSIDE RADIATION ADMITTED
GLASS 99%+
WOOD SHEATHING 66%
BRICK VENEER WALL 50%
18 inches of CONCRETE 1%
25 inches of EARTH 1%

The percentage of radiation that would pass through different materials.

In the fallout shelter surveys, different materials and structural systems were assigned a density rating in pounds per square inch. Calculations that took into account these density ratings, along with architectural form, dimensions, and landscaping, resulted in a space's Protection Factor (PF).

THE PROTECTION FACTOR was a quantified assessment of the fraction of radiation a person theoretically would receive inside a particular space compared to what he or she would receive with no protection at all. PF was expressed as the denominator of the fraction: in a PF 100 fallout shelter a person would receive 1/100 of the outside radiation dose; a PF 40 shelter would be less protective, reducing the dose to 1/40.



Different rooms or spaces within a building have different PFs depending on their construction and their location and orientation toward radiation sources. Fallout, like dust, settles on exposed horizontal surfaces—roofs, ledges, and ground planes. Often the core of a structure, distant from these horizontal surfaces, offered the best protection within a building; a reinforced core of thicker concrete was even better (Building B, *right*). The materials, methods of construction, and design did make a significant difference, even between two buildings with the same volume, layout, and square footage.

taught how to predict a building's structural details by studying the facade. In theory, it was these details, such as the materials and methods of construction and connections, wall and floor massing, allowable loads, and square footage, that determined the amount of fallout protection that a building, or a space within a building, offered (see "Fallout Protection"). This rating was quantified as the space's Protection Factor (PF). The OCD established minimum standards for public fallout shelter: PF 100, with ten square feet of space and one-and-a-half cubic feet of storage per shelteree. To be marked as such, each public fallout shelter had to have a capacity of at least fifty persons.

In developing minimum standards for fallout shelter, architecture for civil defense took the early modernist theme of *existenzminimum* to its ultimate rationalization, that of mere survival. *Existenzminimum* was a concept developed in the 1920s by German architectural research into the minimum living requirements for working-class public housing, and was based on what architects believed were universal design standards. The contemporaneous American model was the standardized single-family home studied by government agencies and building industries in the quest for what historian Greg Hise has termed "the minimum house."[29] Civil defense architects drew on this modernist tradition of research to make conclusions about shelter existence, considering minimum ventilation, lighting, and sanitation needs down to the cubic foot, candela, and quantity of toilets.

Reflecting the meticulous statistical science with which the OCD intended to map the nation's protective resources, each individual structure in the National Fallout Shelter Survey was assigned a standard location code modeled on Census Bureau data management. The codes were essential for tracking and sorting the standard punch card forms, or FOSDICs (Film Optical Sensing Device for Input to Computers), that were completed for each address, recording the detailed data needed for computers to make preliminary PF calculations. The FOSDICs from each contract area were bundled and shipped to Jeffersonville, Indiana, where they could be centrally processed en masse through Census Bureau microfilm machines and then converted to magnetic tape. The tape then went through Bureau of Standards computers in Washington, D.C., for calculation of individual PFs. As the narrator of an OCD film depicting the process intoned over images of IBMs at work, "The recorded information on one building, which would take a professional architect-engineer about five hours to compute, can be processed by an electronic computer in less than

one second." The computers printed listings of each separate space within a building that showed even the slightest potential for community fallout shelter; specifically, those areas greater than five hundred square feet with a PF greater than 20. The long printouts of these calculations were then returned to the architect and engineer contractors. The "raw data" were kept by the OCD on microfilm "for future recomputation should scientific advances require."[30] The regional diversity of American architecture thus became a quantitative readout reflecting computer calculations of shielding, square footage, and layout.

Phase I of the survey generated lists of buildings and spaces that might offer protection as a result of their barrier and geometric shielding. To be suitable as fallout shelter a third factor, *time,* had to be considered in addition to the radiation protection achieved through mass and distance. The architectural inspections of Phase II were meant to ensure that spaces flagged by the computers actually were habitable, at least in emergency situations, and to recommend alterations that would improve their PF, capacity, or habitability. "Thus human judgment is a check on the computer," Assistant Secretary of Defense Pittman assured an audience of architects and engineers still skeptical of the machine data-processing revolution.[31] In Phase II, then, analysts visited each prospective fallout shelter space and evaluated specific characteristics such as ventilation, drainage, auxiliary power, orientation of door and window openings, and conditions of ingress and egress.

The OCD film *Protection Factor 100* was aimed at educating professionals, property owners, and the general public about Phase II inspections, and about the National Fallout Shelter Survey more generally. The film showed architects being greeted by receptionists, then guided by building managers through the nooks and crannies of potential fallout shelter in basements, garages, tunnels, and other appropriate spaces (Figure 2.2). Clipboards in hand, costumed in the crisp white shirts, dark suits, and thin black ties required of experts at the time, the architects in the film—like those conducting the survey on the ground—pantomimed protection on the stages of America's public buildings. The survey was a morality play performed for thousands of building occupants in communities across the nation.

Participation in the survey also offered good opportunities for architects: government work looked good on curricula vitae, it kept firms and individuals solvent, and it could lead to new commissions. In correspondence with the author, Charles Harper reflected on his role in the survey

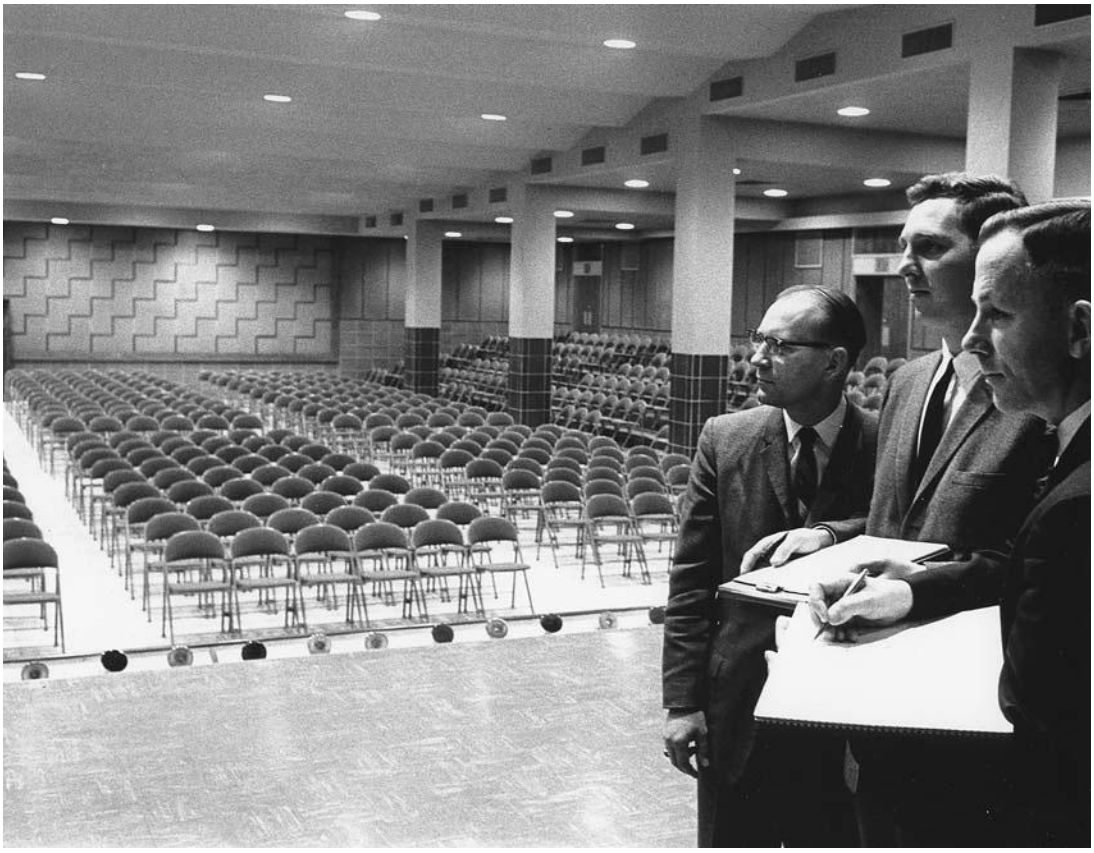


FIGURE 2.2. Architects conducting Phase II of the National Fallout Shelter Survey, as depicted in the Office of Civil Defense film *Protection Factor 100*. The building manager shows them the basement auditorium of an institutional building. Photo no. 27-S-14; RG 397-MA; National Archives, College Park, Maryland.

and some of its repercussions for his career as an architect and disaster response planner. After Harper completed the analyst course, the survey became his newly formed firm's second contract. As he says, it "kept me in business for a year at least and the marketing I was able to do was very profitable." An astonishing chain of connections arose from Harper's first foray into government contracting for civil defense. He recalls that there were

> several clients that I gained from meeting them during the survey. One that comes to mind quickly was a large Savings and Loan in Denton, Texas. Their building looked, on the outside[,] like it would be a good shelter, three or more stories tall and cover[ing] about ¼ of a block. I went in the building and talked with the S&L President who was interested that someone thought his building would be useful for that purpose . . . The work on this took several hours and a couple of return trips. He took a liking to me, I was 31 years old at the time and looked like I was about 18, I wore a suit all the

> time to make me appear older, he thought that was great. About two months after we had marked the small shelter, he called me to come see him about doing a new building for the S&L . . . it was a rather stately building, and because of that building, I did about 15 banks and S&Ls over the next 10 years. Because of that work, I was asked to do a rather large S&L here in Wichita Falls in 1980, 20+ years after the survey work . . . After the opening of the S&L here, the building got so much local press coverage I was rewarded by being asked to serve on the Board of Directors of the S&L, a wonderful job that bore the fruits of many other local buildings.[32]

Not all architects conveyed their survey work into similar strings of success. But Harper's story indicates that survey contractors were welcomed warmly and looked to for their expertise in building construction.

To effect entry into buildings for the surveyors, the district officer of the COE provided contractors with a form letter of introduction requesting the cooperation of property owners and managers. For the most part, owners were amenable to outside architects and engineers analyzing their buildings—even "honored" to serve their community in such a manner, according to Harper. Another participant, Jeu Foon, who became an engineer with Los Angeles Water and Power, recalls the ease with which he accessed blueprints and building interiors, even those of banks, when he was a summer student conducting fallout shelter surveys in Missouri in 1969–70:

> Most businesses accepted the introductory and identifying letter without further ado. Banks usually made the phone calls verifying our identities and purpose . . . The Corps had contacted reporters for the local newspapers to alert the public about our purpose. Some of us carried a copy of the article to further validate our identities. After the first two weeks, it seemed like everyone knew we were coming. Word of mouth had preceded us. Many expressed appreciation for protecting them from "the Bomb" . . . I do not recall ever being refused access to a building.[33]

Similarly, in St. Paul, Minnesota, out of 963 Phase II surveys conducted by the architecture and engineering firm Toltz, King, Duvall, Anderson and Associates in 1962, analysts were only denied access to fifteen facilities, mostly "due to the confidential or patented processes being carried on in these listed areas," such as the 3M Research Center.[34] Owners and managers likely saw welcoming the surveyors as a public service, and as a way to learn about their own buildings should they decide to provide a private shelter for employees or tenants. For example, the Mobil Oil Company

obtained detailed information about the shelter strengths and weaknesses of their terminal, warehouse, and office facilities in St. Paul. The information was controlled by the OCD, however, so that private interest in the program could be tracked; Mobil was forced to work through the city's Bureau of Civil Defense in order to receive the pertinent details from the report on its facilities.[35]

Many institutions were eager to have their buildings and campuses surveyed. At the University of Minnesota, for instance, history professor and member of the campus civil defense committee, Rodney Loehr, urged the school's president to write the local commanding officer of the COE to request that surveys of the Twin Cities begin on campus. In support of the request, Loehr suggested, the president should cite the university's "high population density . . . the fact that we are training scientists, technicians, engineers, teachers . . . the number of persons engaged in experiments and developments for national security, and the fact that we are training a large number of future officers of the services in our ROTC program." The University of Minnesota, Loehr concluded, was "an institution of such importance that we deserve a high priority in the shelter survey."[36] Whether intended, this sentiment harks back to the 1950s proposals for "selective dispersion"; in a crisis situation those to be protected first would be the experts and servicemen whose vocations were, presumably, most pertinent to ensuring the continuity of the nation.

LICENSING, MARKING, AND STOCKING

For architect and engineer contractors, the site visits and reports they prepared for Phase II marked the culmination of their professional duties for the survey. The next aspect of Phase II, the licensing, marking, and stocking of fallout shelters, was a responsibility handed over to local civil defense officials, who were expected to contact building owners, coordinate volunteers, and direct the warehousing and movement of supplies. Building owners were less amenable to this more invasive and permanent aspect of the fallout shelter program. As a civil defense textbook pointed out, since "the property owner received no financial consideration, any appeal for cooperation had to be made to his patriotism."[37] Still, when it came to signing licenses for the emergency public use of their properties, owners' rate of refusal was low, a statistic the OCD often quoted to its advantage. Looking back from 1969, when local officials had approached over 130,000 building owners, the OCD was pleased to report that 88 percent had signed

licenses, with only 2 percent declining "because they are unsympathetic to civil defense."[38] The OCD had a number of ways to persuade owners of "the benefits to be gained from allowing all or portions of their buildings to be used by the public as fallout shelters in case of impending or actual nuclear attack." According to a pamphlet distributed to potential licensees, the building owner could strengthen labor-management relations through concern for employee welfare; ensure employee survival to continue business operations; and enhance the company's "public relations stature by providing shelter for citizens." In addition, the owner would identify himself, "or his corporation, as a leader in his business and in the community"; and he would be "an important component of our total national defense, which requires the interest and cooperation of all citizens." If that was not enough, the list concludes with the bottom line for civil defense: "He may save his own life."[39]

In exchange for all these benefits, building owners had to permit the posting of signs inside and out, and provide storage space for shelter stocks of food, water, and equipment. These two requirements were deal killers for some fallout shelter licenses. First of all, the once-ubiquitous fallout shelter sign, with reflective yellow triangles on a black circle, would have been far more striking than the faded signs we know today. The color combination was chosen on the recommendation of behavioral scientists who believed it best for grabbing the attention of citizens in an emergency and in their everyday practices (Plate 5).[40] Owners at the time were critical of the fallout shelter sign's garish appearance, and in particular its divergence from their building's image. The summary of the "Shelter One" project—a preliminary test of the licensing, marking, and stocking program—noted numerous concerns with the signage:

> The question of location of the signs are *[sic]* not resolved at this time. Some building owners are requesting that markings be at entrances other than the main entrance. Some owners are requesting arrows only inside and some are requesting different designs and colors more compatible with their architectural design . . .
>
> Methods of affixing the sign to the walls also required time consuming discussion. One building owner who had signed the license cancelled because he refused to have the signs attached to the marble front of his building.[41]

Ironically, architects were involved in executing a program that was seen as undermining the aesthetic appeal of buildings, that sacrificed the delight

of an existing architectural design for the mere functionality of signage. As these qualms about the sign suggest, the quest for a uniform national image (and message) for civil defense would continue to be challenged by individual aesthetic judgments, local needs, and divergent opinions.

Adding to the complexities of licensing and marking, the stocking of fallout shelters also proved a daunting task. The OCD required building owners to provide space for the permanent storage of water, high-energy crackers and supplements, and kits for sanitation, first aid, and radiological monitoring.[42] Just food and water amounted to almost forty pounds of storage per shelteree. In the smallest shelter included in the survey (capacity fifty), the total would be almost two thousand pounds and cover ten square feet when stacked to a height of eight and a half feet—a height not available in many basement storage areas (Figure 2.3). Without any remuneration, property owners subject to downtown real estate values may have been reluctant to turn over valuable floor space, even basement storage, to bulky civil defense supplies. In larger-capacity fallout shelters slated to protect thousands of citizens (Figure 2.4), the weight and space needs quickly added up, straining structures, and sometimes disqualifying sites. The OCD seemingly forgot that water is heavy and had to issue a corrective memorandum in 1963 titled "Building Floor Load Problems."[43]

The logistics of stocking many big shelters in dense urban areas fully occupied municipal civil defense departments. Usually, officials chose weekend days when traffic was lighter in dense urban areas, and free labor and transportation might be available. Local trucking companies often donated the use of semitrailers to get supplies from government warehouses to individual buildings; businesses, college fraternities, and service societies provided volunteers to load and unload trucks and fill water barrels. The experience of Boston, as depicted in the *Annual Report* of its Civil Defense Department, indicates the necessary coordination:

> The stocking of fallout shelters has been a problem because laborers have not always been provided to handle the transfer of supplies.
>
> On July 7, 1965, the City of Boston Civil Defense Department with the assistance of the National Defense Transportation Association [volunteer truckers] and the Massachusetts Bay Transportation Authority commenced the stocking of fallout shelter supplies for use in the downtown department stores. The [MBTA] offered their facility at Andrew Station as the storage area for these supplies. Three hundred and fifty tons of food and medical equipment were stored in this facility to care for 74,000 people in an emergency . . .

FIGURE 2.3. Fallout shelter supplies for fifty people for two weeks. Photo no. 311-M-9-12; RG 311-M; National Archives, College Park, Maryland.

FIGURE 2.4. Shelter supplies for one thousand or more people stored in the basement of a federal office building, Memphis, Tennessee. Photo no. 6-G-5; RG 397-MA; National Archives, College Park, Maryland.

> This operation took the better part of two months. Fortunately twenty laborers from the Neighborhood Youth Corps program were assigned to handle the transfer of supplies . . .
>
> William P. Durkee [Pittman's replacement as assistant secretary of defense for civil defense] . . . awarded a Distinguished Service Citation to the [MBTA] for their cooperation in stocking this facility.[44]

The MBTA was a regular participant in civil defense activities: it also stocked some 60,000 fallout shelter spaces in its own facilities, and two of its subway stations stored OCD-issue, 200-bed portable emergency

hospitals. Some of the many other fallout shelters that ultimately were marked and stocked in Boston included 350 protected areas in 104 buildings under the management of the Boston Housing Authority; about 100,000 total spaces in the State Capitol, Suffolk County Courthouse, and the new federal government skyscraper; and, eventually, more than 19,000 spaces in the new Boston City Hall.[45]

Overall, marking and stocking were excellent public relations opportunities for the fallout shelter program (see Plates 6 and 7). First of all, here were material objects that could be shown to Americans to demonstrate the activities of the OCD. Exhibits of shelter supplies traveled to state fairs, conferences, and other public events, where pretty hostesses displayed dosimeters, Geiger counters, and medical kits. Cutaways on containers of crackers and water revealed their contents to curious citizens. Stocking especially was often accompanied by ceremony and media attention, and the MBTA's citation reveals that participation was also good public relations for organizations that aided the OCD. For this reason, the architecture and engineering firm that completed the survey of St. Paul was disappointed to be left out of the inaugural "Public Fallout Shelter Stocking and Marking" ceremony at the Minnesota National Bank. The director of St. Paul's Bureau of Civil Defense assured Toltz, King, Duvall, Anderson and Associates that he had "made every effort to include the firm name in all public information releases." In this case, the stocking ceremony represented to the architects and engineers, as to the civil defense officials, "a sort of culmination of all [their] efforts in the National Fallout Shelter Survey during the past 10 months."[46] In other cases, a ceremony might commemorate the incorporation of shelter space in a particularly prominent structure or institution. For instance, in January 1964 dignitaries gathered for a ceremonial sign posting at the Canadian Joint Staff building in Washington, D.C., the first foreign mission in the United States to provide public fallout shelter (a separate shelter within the building itself was for staff only). The Canadian ambassador C. S. A. Ritchie, U.S. assistant secretary of defense Steuart Pittman, and others were present to commemorate the stocking of this shelter for fifteen hundred persons in the structure's parking garage (Figure 2.5).

These observances are akin to the ceremonies associated with the laying of cornerstones, "topping out" at the completion of the structure, and other architectural rituals explained by historian Neil Harris; they are rites of passage that produce meaning in inanimate objects like buildings, spaces, and graphic designs.[47] The analyzing, licensing, marking, and

FIGURE 2.5. Ceremonial posting of a fallout shelter sign on the Canadian Joint Staff Building, Washington, D.C., 1964. Photo no. 2-C-10; RG 397-MA; National Archives, College Park, Maryland.

stocking of shelters in Phase II allowed the OCD and the federal government to offer specific material and statistical evidence that something was being done about the threats to the nation. The architectural interventions and rituals of the fallout shelter program were links in a chain connecting spaces and signs with a meaningful story about experts providing solutions for Cold War crises. However, even if the OCD took advantage of the seeming solidity and material conclusiveness of architecture as a medium, the meanings of "fallout shelter" would be contested outside the shelter door.

MAKING MEANING OUTSIDE THE FALLOUT SHELTER

Despite the fanfare associated with the milestones of marking and stocking, the overall tenor of the fallout shelter program was quiet implementation. In 1963, Pittman told the American Legion that public ignorance and political indecision notwithstanding, the OCD was "quietly coming to the surface with a solid base for a realistic and expanding civil defense program."[48] The image (repeated several times in the speech) is of literally decrypting a national protective capacity buried within the built environment; it conjures 1950s projections of subterranean bunkers, now extruded to the surface and exposed as fallout shelter in existing buildings. The recurring language of quiet implementation indicates the disengagement from the fallout shelter debates on the part of officials. Instead, the ongoing activities and representations of the National Fallout Shelter Survey, especially the profusion of fallout shelter signs, spoke volumes about the OCD's position on preparing for war. In the same speech, Pittman expounded the meaning of the program's signifier:

> The black and yellow shelter signs that you have seen going up in many cities around the country have a significance which will be more fully understood by people in the course of this year. These signs mean more than merely masonry shielding from radiation. They probably point to the best available protection against the outer reach of blast. These signs mean food and water which will permit people to stay under cover long enough to save their lives. They mean trained leadership; a communications link to sources of authoritative information and direction . . .
>
> The sharp difference between the proposed new program and civil defense of the past is very simple. For the first time, we are tackling the fundamental requirement of a place for all people to go.[49]

Pittman insisted that the fallout shelter signs represent survival and continuity, and that they are posted in metonymic relation to an extensive, efficient, and national organization with a national plan.

The OCD-sponsored television series *A Primer for Survival* highlighted the same connection between signs and signified. An episode titled "The Sword and the Shield" put forward the notion that if nuclear arms buildup represented the sword, then the fallout shelter program was simply the nation's shield. The episode opens with a pair of medieval knights in combat, focusing on their shields; this fades to the image of a welder's face shield, then to a flat-roof modern house surrounded by storm clouds, and finally to the fallout shelter sign. This opening sequence places the

fallout shelter sign within a chain of meaning that connects the fantasy of armor to the new requirements of modern shelter. In the links of the chain, the level of protection completes a progression in scale from the individual to the family and finally to the nation, indicated by the final image of the fallout shelter sign. While marveling at the national scale of the program—for instance, how twenty-seven hundred manufacturers across the country were involved in producing shelter supplies—the narration in "The Sword and the Shield" equally emphasizes how individuals and local communities can and do prepare themselves to participate in the defense of the homeland.

Local mobilization always was essential to the message and plans of civil defense, as was the connection between individual participation and good citizenship. As geographer Louise Appleton argues, in the Cold War United States it was through the local scale "that citizens experienced the nation."[50] The nested scales that mediate the production and distribution of national identity were described by Assistant Secretary of Defense William Durkee to a 1965 seminar on national security in Lincoln, Nebraska. The city of Lincoln, he noted, could boast seventy-nine trained shelter managers assigned to enough public fallout shelter space to accommodate 88 percent of the population:

> And the Lincoln civil defense program is a part of the Nebraska civil defense program, which is a part of the United States civil defense program . . . which could hold the life-thread of our Nation in the event of a nuclear attack.
>
> And did it start with the individual? Yes, it did . . . It started with, and it grows from, the individual looking at his role in the affairs of this Nation.[51]

Fallout shelter signs, and the spaces they led to, were community conduits through which national identities and priorities could be delivered to individual subjects. In this way, each fallout shelter sign was a local iteration of the national civil defense rhetoric. Still, if communicative acts are always subject to multiple interpretations, then meaning is subject to destabilization as it jumps geographic scales. When the federal programs being communicated are continually shifting, inconsistently supported, and based on the subtleties of fallout versus blast protection, the meanings are especially unstable.

A consistent message was a constant problem for the OCD as it tried to control wide divergences in implementation and interpretation of the

civil defense program, even at the federal level. For instance, Protection Factor (PF) was meant to be a precisely quantifiable denomination within the fallout shelter program; but the way PF ratings were used was subject to qualitative fluctuations in the national sense of threat, or in the political status of shelterees. The minimum standard for designating a fallout shelter was in flux during the first year of the program. Initially, the OCD required public fallout shelter space to be at least PF 100. At the time of the Cuban Missile Crisis, the level was reduced to PF 40 to quickly increase the nation's shelter capacity. The OCD proceeded to mark PF 40 shelters with only verbal permission (rather than signed licenses) from building owners on the initial assumption that these would be temporary. After the crisis, though, PF 40 quietly became the official standard for public fallout protection. Historian Alice George notes that "lowering the shelter standards was a sleight-of-hand maneuver intended to provide the illusion of safety."[52] Meanwhile, 100 and greater was maintained as the minimum PF for so-called continuity-of-government facilities, which would protect elected officials, government experts, and other important citizens. There is also some evidence to indicate that only fallout shelters rated above PF 100 were actually stocked by the federal government with emergency supplies, which would suggest that PF 40 shelters were maintained in the survey to pad the numbers of identified spaces, toward a message of national fallout protection.

Another essential order of consistency that proved difficult to achieve was devising a fallout shelter policy for federal government buildings. When civil defense became part of the DOD mandate, a policy promptly was established for military facilities to serve as models for the rest of the country. As an internal memo stated, "It is imperative that uniform criteria be used in the planning of a fallout shelter program and that it be consistent with the civilian program requirements . . . to assure the most expeditious and widespread attainment of Federal example."[53] The General Services Administration, which was the landlord for most federal facilities, rolled fallout shelter planning in with its overall safety policies, such as fire drills, security details, and emergency shutdown procedures. To serve as models for private building owners, federal agencies were required by the executive branch to provide fallout shelter and emergency plans to accommodate both their employees and the general public (Figure 2.6). However, implementation of this directive was subject to local contingencies, the cost of possible alterations, and the security classification of the facility. Thus, not all federal buildings had public fallout shelters. For example, most of the thirty-two thousand fallout shelter spaces found in a 1958

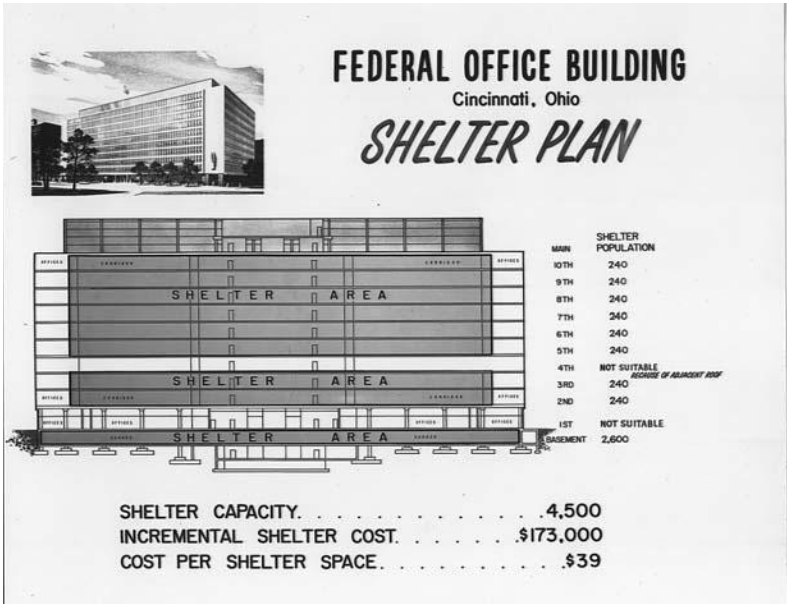


FIGURE 2.6. Shelter plan for a federal office building. Photo no. 311-M-23-31; RG 311-M; National Archives, College Park, Maryland.

experimental study of a group of federal buildings in Washington, D.C., would be excluded from the public shelter program of the 1960s for security reasons; the agencies that inhabited them were loath to make available to the public, even in an emergency, areas that normally were restricted to federal bureaucrats. Nevertheless, it was OCD policy that *all* federal buildings be uniformly marked with the black and yellow signifiers of the national protective program:

> Even though . . . space would not normally be available to the outside public, shelter signs should be posted. These signs merely indicate that there is shelter space available for use by the public. There exists the possibility of changing conditions and unforeseen circumstances that may make that particular shelter area available to the public.[54]

Evidently, in these cases the exterior signs were posted purely for symbolic value. Notwithstanding questions of public access to federal facilities, the federal government would continue to present the message that fallout shelter was (or, at least, could be) available to all Americans in existing buildings.

Although it never became a standardized construction program like the Interstate Highway System (another project related to Cold War civil defense), the fallout shelter program strove to impart a similar message

to citizens. As geographer Wilbur Zelinsky argued about interstate highways, "Their uniform engineering standards and system of signs, never [let] us forget the supremacy of the state."[55] With the fallout shelter signs, the state reminded its citizens at every turn, on every block, that it could protect them. Fallout shelter signs were reminders, or mementos, of the state's power over the preservation of life, and the subjects they addressed were meant to modulate their behavior. If *memento mori* have traditionally prompted sinners to mend their ways of life, because death can come in any instant, then *memento vivere* such as the shelter signs prompted citizens to modulate their ways of life for the same reason. In the latter case, however, citizens are rewarded by the succor of the state in this life rather than the repentant sinner receiving his or her judgment in an afterlife. Like the interstate highways, though, where citizens regularly exceed posted speed limits, fallout shelter signage was subject to interpretation.

Certainly, not everyone accepted or understood the ubiquitous fallout shelter signs as indicators of benevolent federal protection; many viewed them negatively, with suspicion, fear, disbelief, or confusion. Many citizens resisted their part in the bargain of biopower as it was expressed through civil defense. As material signifiers of home front preparation, fallout shelters and signage were targeted by organized public protests against civil defense. The popular folk singer Bob Dylan did much to perpetuate and ridicule the image of the fallout shelter as simultaneously bunker and tomb with his 1962 protest song "Let Me Die in My Footsteps" (originally known by its opening lyrics, "I will not go down under the ground . . ."). More specifically, singer-songwriter Mark Spoelstra's "The Civil Defense Sign" (1963) belied the inconsistencies, inequities, and inevitabilities that fallout shelter signage seemed to stand in for (Figure 2.7). The editors of *Broadside* magazine, which published the lyrics to both songs, satirically noted that "the little arrows point ever[y] which way, backwards and forwards, around corners and straight ahead, sideways and down, to the right and the left. It is said that if you follow the signs long enough you'll find some crackers and canned water. But you won't find protection . . . even the youngest school child knows by now that there is no defense against atomic bombs."[56] The confusion over directional indicators would have been particularly problematic in the most heavily built-up areas of American cities, where multiple buildings on each block might be marked. A fallout shelter sign still in place in Harlem today (Figure 2.8) suggests how the arrows might prompt a moment of hesitation that could cost a citizen his or her life.

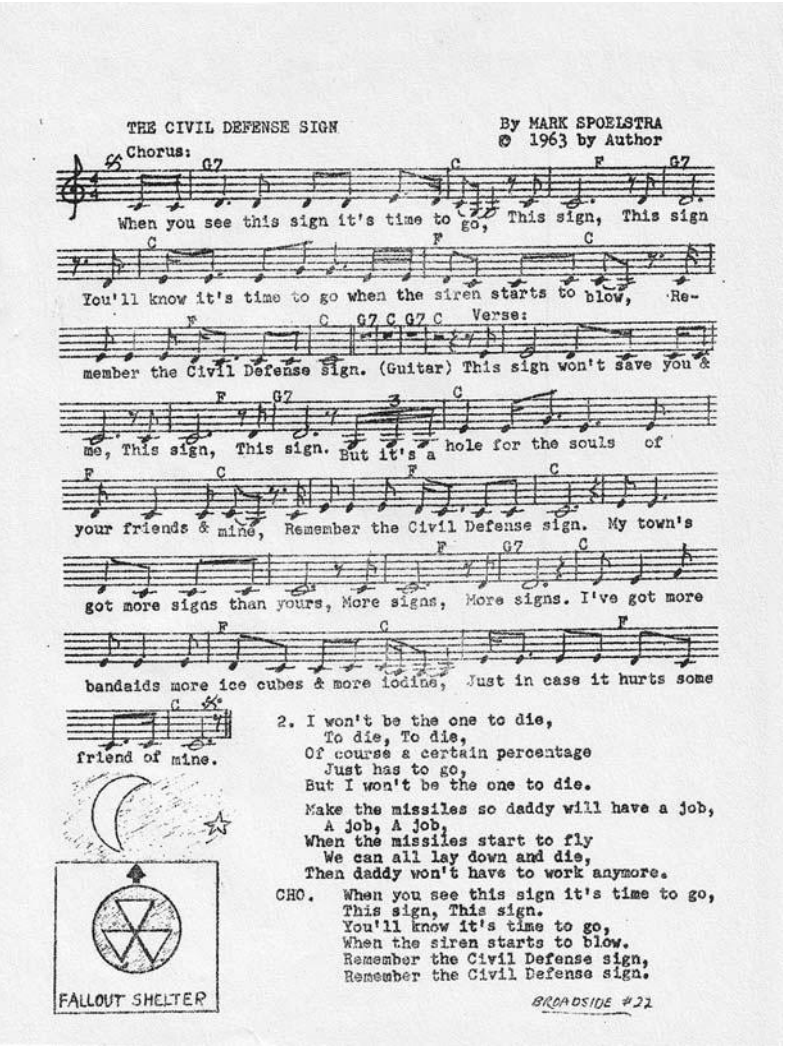

THE CIVIL DEFENSE SIGN
By MARK SPOELSTRA
© 1963 by Author
Chorus:
When you see this sign it's time to go, This sign, This sign
You'll know it's time to go when the siren starts to blow, Re-
member the Civil Defense sign. (Guitar) This sign won't save you &
me, This sign, This sign. But it's a hole for the souls of
your friends & mine, Remember the Civil Defense sign. My town's
got more signs than yours, More signs, More signs. I've got more
bandaids more ice cubes & more iodine, Just in case it hurts some
friend of mine.
Verse:
2. I won't be the one to die,
To die, To die,
Of course a certain percentage
Just has to go,
But I won't be the one to die.
Make the missiles so daddy will have a job,
A job, A job,
When the missiles start to fly
We can all lay down and die,
Then daddy won't have to work anymore.
CHO. When you see this sign it's time to go,
This sign, This sign.
You'll know it's time to go,
When the siren starts to blow.
Remember the Civil Defense sign,
Remember the Civil Defense sign.
FALLOUT SHELTER
BROADSIDE #22

FIGURE 2.7. Music and lyrics to "The Civil Defense Sign" (1963) by Mark Spoelstra, as published in *Broadside* magazine, February 1963. Copyright by Stormking Music, Inc.; all rights reserved; reprinted by permission.

Of course, it is difficult to say for sure what "even the youngest school child" knew in the early 1960s. Americans who were subjected as schoolchildren to "duck and cover" drills and fallout shelter exercises recall the anxieties and nightmares these rituals caused. Nearly all the respondents to my listserv query asking for fallout shelter recollections mentioned the drills. For example, Janet Davis wrote:

> My elementary school in Houston designated interior hallways in the 1930s-era brick building as our preferred shelter area . . . No basements, of

FIGURE 2.8. Equivocal fallout shelter sign, Harlem, New York. Photograph by the author.

> course, in mushy-soil coastal plain locations. When the drill began, bells would sound, we would file out of our rooms in relatively good order and then line up against one wall . . . we would sit down and wait for the "Drop and cover" order. . . . It was all kind of fun when you're in the lower grades, then it was a joke by the time we reached 6th grade.

Many respondents claimed childhood bemusement, innocence, or disbelief in the effectiveness of civil defense programs. M. Russel Feldman reported:

> We did indeed see those ubiquitous fallout shelter signs. I have to say that we didn't pay much attention though—we all had an abiding sense that, as we were so close to [New York City], we would never survive an attack.

Similarly, Pieter Roos pointed to the numbing omnipresence of fallout shelter signs, when he transported me back to his early childhood:

> Until I was six (early 1966) I lived in Brooklyn Heights in NYC and I remember the black and yellow symbols all over the place. . . . I remember seeing the civil defense signs and as I began to read I could understand what the words meant. There was one on the St. George's Hotel which was just a couple of blocks away. They were ubiquitous, there were so many of them that to a young child they were simply a part of the urban landscape. They all looked like they led to dark and dirty places like the subway (where one saw them in profusion).

A number of responses referred ironically to merit badges earned for spending the night in a shelter, or volunteering for civil defense duties they never understood as children.[57] What comes through in these recollections is a combination of dutiful obedience and the innate ability of children to undermine inexplicable adult activities. They also point to a blurring of memory between "duck and cover" drills of the 1950s and the fallout shelter strategies of the 1960s. In fact, civil defense practice regularly blended previously established patterns with new plans for survival.

While children lacked a public outlet to explore their Cold War fears or bemusement, college students often expressed dissident opinions on the fallout shelter program. Guerrilla interventions resisted materially the resignification of the built environment, while organized protests called on the academy to oppose the irrationalities of civil defense. Fallout shelter signs were vandalized and stolen when posted on campus buildings. Confronted with at least eighteen fallout shelter signs having been "removed or mutilated by students" during the spring semester of 1963, the administration at the University of Minnesota somewhat condescendingly acknowledged the students' outlook toward open debate. Writing to appease the colonel in charge of the fallout shelter program at the district office of the COE, the university's vice president explained that

> among things that characterize a college or university student body is the fact that there will always be a segment of activists on almost any subject . . . There have been lively discussions in some of our student groups about the fallout shelter signs and, to some students—who at this stage in their life like

> to think of themselves as active pacifists—the signs in themselves are a war-like act. The University, of course, in no way shares this feeling . . . We do feel it to be completely our responsibility to cooperate with you in the fallout shelter sign program. And yet, the way in which we handle our problem on a campus I expect is probably more sensitive than it might be in any other type public building. In some cases the sign removal may not be an act of vandalism. It may reflect a misguided, but nonetheless sincere attitude.[58]

It is not known whether this liberal viewpoint on protest—or the letter's subtle distinction between criminal vandalism and sincere vandalism—was a satisfactory answer to the Corps of Engineers. However, it indicates the institutional sense of "responsibility to cooperate" with the OCD's fallout shelter program and with the posting of its signage, whether the institution or its constituents had any confidence in civil defense. As a result, the university continued with the licensing and marking of fallout shelters across campus (ultimately, some fifty thousand spaces).

Faculty, staff, and students at Columbia University fared little better in their attempt to convince administration to revoke the permission for, and request the removal of, posted fallout shelter signs. In an open letter signed by more than 650 members of the campus community, the school's chapter of the Student Peace Union and Committee for Disarmament wrote that they were

> deeply disturbed by the sudden, but prodigious effort to label "fall-out shelter locations" in buildings on our campus . . . We believe that shelters are especially useless in New York City . . . We do not feel that such a "spare-the-cities" strategy is at all probable but that New York City would be a prime target for enemy missiles . . . such activity [marking shelters] fosters a false sense of security and prepares our people for the acceptance of thermonuclear war as an instrument of national policy. It is appropriate that an academic community provide leadership in exposing the folly of the present program.[59]

Prominent faculty who signed the front page of this letter included Susan Sontag (then an instructor in religious studies); the noted industrial engineer and critic of the military-industrial complex, Seymour Melman (who was also the editor of *No Place to Hide: Fact and Fiction about Fallout Shelters,* 1962); and civil engineering professor and former consultant on the Manhattan Project, Mario G. Salvadori, who would later achieve fame for his 1992 bestseller *Why Buildings Fall Down.* Of course, the point of the fallout shelter program was that radiation does not make buildings fall

down. But by critiquing the DOD assumption that cities might not be direct targets, the letter uncovers the propagandistic purpose of posting signs where the largest number of people will see them, even if the shelters themselves might be irrelevant as protection. For these critics, the signs indeed stand in for "security," but only a false sense of it.

MAKING MEANING INSIDE THE FALLOUT SHELTER

Retreating from these controversies of the public realm, and into the shelters themselves, did little to clarify the program or defuse public controversy. Interior signage directed people along unfamiliar corridors or down dusty, mysterious stairwells; sometimes, this interior signage remains today as a reminder of civil defense history (Figure 2.9). For instance, at

FIGURE 2.9. Fallout shelter sign over basement stair, West Mall Office Building, University of Texas at Austin. Photograph courtesy of Nancy Kwallek.

an elementary school I visited outside Boston, fallout shelter space was marked in a basement service corridor and its flanking crawl space. The dirt floors of this poorly lit shelter must have made civil defense drills a filthy and fearful experience. In large structures, the fallout protected area may have been one corner, or the service core, of any given floor, and the location could change on different floors within one structure, depending on each area's PF. Where the fallout shelter formed only a portion of a room or floor, boundaries would be demarcated by adhesive signs that read "Fallout Shelter Begins Here." The "Shelter One" project noted that difficulties "developed in the actual marking of the confines of the shelter area. In some cases signs lead to shelters but do not define doors that should not be opened to less protected areas."[60] OCD planners never quite solved this problem; often there were no doors to separate protected from unprotected areas, but an imaginary line that only signified in the analyst's geometric calculations of distance to fallout sources. In the interest of finding "fallout protection for every American," the OCD extended shelter space to the point that subtle orientations of signage could be the difference between life and death. Inside the fallout shelter, the OCD sometimes sacrificed clarity for quantity.

For example, with the signage that remains inside Wilson Library at the University of Minnesota it is unclear what is meant by the word "here" in "Fallout Shelter Begins Here." The sign is posted at the intersection of two wall planes just inside and to the right of the main entrance (Figures 2.10 and 2.11). Which axis is indicated by the sign's arrow? Is the boundary of fallout shelter along the axis perpendicular to the viewer, in this case extending across the top of a broad, open staircase, or does it pass through the viewer and across the lobby? Either imaginary axis would lie only a few feet from glass doors leading to an outside plaza. Presumably, fallout protection is available either in or adjacent to the lobby at ground level because of the deep overhang of upper stories that shades the library's entrance. However, nonexperts unaware of the intricacies of fallout protection might have mistakenly sheltered in the lobby instead of the staircase. More likely, they would have felt safer at the bottom of those stairs where the library connects to the almost unlimited shelter space of the "Gopher Way," the university's tunnel system.

Indeed, when the fallout shelter signs first were being posted, one Minnesota student named Richard Niemi wrote the university president from his residence hall: "When one sees the locations of some of the alleged shelters, it is a bit difficult to restrain oneself from thinking of the

FIGURE 2.10. Fallout shelter sign inside Wilson Library, University of Minnesota, Minneapolis. Photograph by the author.

whole business as being akin to a monumental hoax." Niemi wondered whether "the responsible persons really believe that these and other 'shelter' areas are capable of standing up to the forces unleashed by even a poorly placed bomb?"[61] Niemi's letter indicates clearly that the spaces he sardonically describes as " 'shelter' areas" inspired little confidence in the protection they offered from the bomb. His misunderstanding of the difference between fallout and blast protection emphasizes the complex sell that the program continued to be—professionals and the general public would almost always assume that fallout shelters also needed to be bomb shelters.

CONCLUSIONS

If, as I suggest, civil defense can be characterized as the imagined apotheosis of the welfare state, then fallout shelter signage was a representation of national welfare. As the 1962 civil defense film *Protection Factor 100* concluded, the new fallout shelter program was "committed to the principle that the safety of the individual and his community is a national concern, and that the national welfare is the concern of every community."[62]

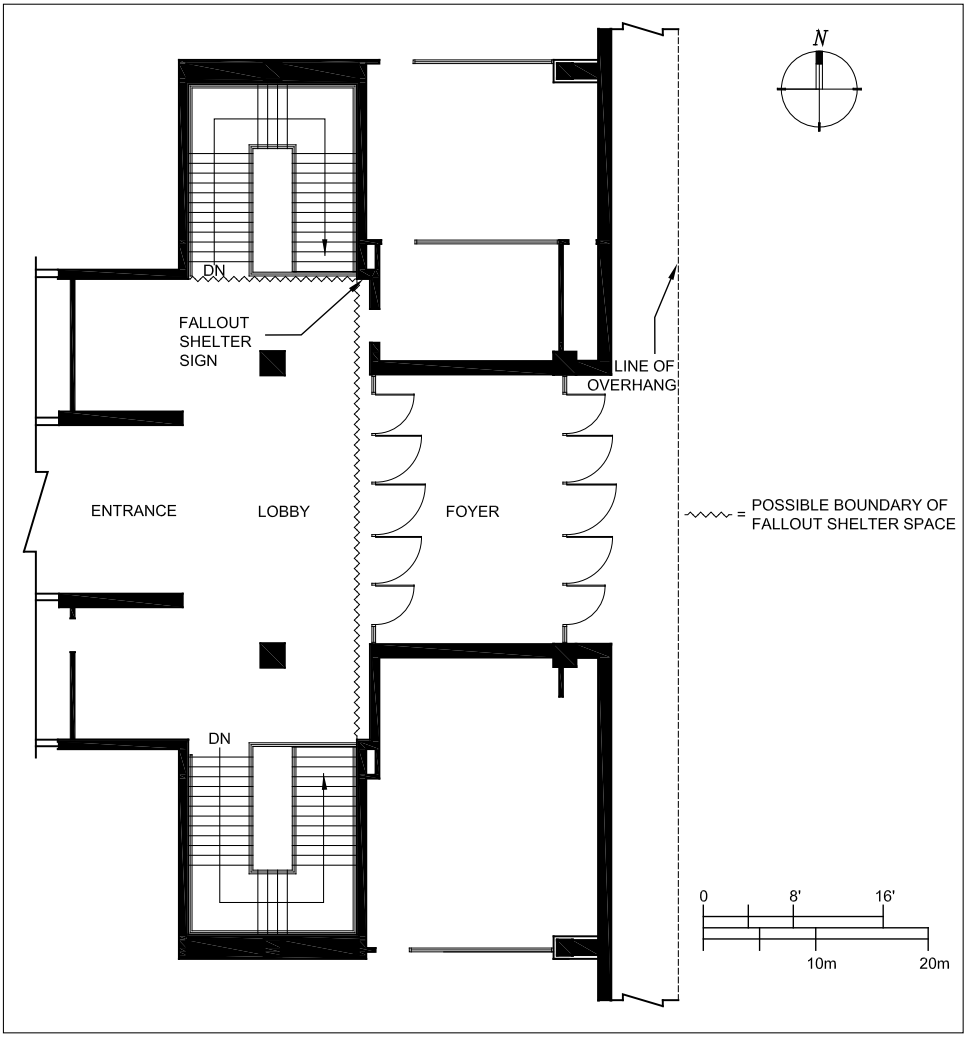


FIGURE 2.11. Plan of entrance area, Wilson Library, noting the possible boundaries of the fallout shelter space based on location of signage. Illustration by the author.

Since the survey entailed traversing, mapping, and demarcating spaces of safety approved by the state, the fallout shelter system inscribed biopower on the cultural landscape. Fallout shelter signs were reminders, or mementos, of the state's power over the preservation of life. As cultural producers, architects helped Americans interpret these signs, making local and national meaning out of complex global interactions.

Architects and engineers played active parts in the National Fallout Shelter Survey, contributing to this production of meanings in the Cold War. The architect and critic Michael Sorkin, looking back from 1995, reviewed his personal role in this performance:

> My own adolescence was also marked by that ripest of postwar graphics, the encircled black on yellow trigram of the fallout shelter/radiation logo. It's a symbol that cuts two ways, a certification of its own impossibility, trying to mean opposites (radiation and safety from radiation) at once. The most readily available summer design jobs during my college days—a brilliant piece of co-opting make-work—were assisting in a nationwide fallout shelter survey, an invitation to read every building in America with the eyes of a paranoid.[63]

In contrast, civil defense officials sought a more positive response from students given the opportunity to earn their tuition while gaining experience, learning about structure and materials, and serving their nation. In the introduction to the *Shelter Survey Technician* (SST) workbook, they assured skeptical undergraduates that the ones "selected to work on the shelter survey program are in store for a most interesting summer job. Interviews with former SSTs have revealed that their overall understanding of construction increases considerably . . . Increased self-confidence in decision making is another important by-product."[64]

The engineer Jeu Foon, whose recollections were quoted earlier in this chapter, looks back on his summers on the survey as "among the best" of his life. In the context of the liberal consensus with which this chapter began, one of the ironies of the story is that Foon ended up taking the job as an SST because racial discrimination at his former workplace barred him from an engineering design position. Regardless, the student program served as a model of professionalism for him; the job was tackled without reference to outside distractions:

> Throughout the first week of training, I waited for some defining statement that a nuclear bombing of the United States was imminent and that our work was critical. I don't remember any such comments ever being made. Our trainers simply approached the work as an engineering exercise in evaluating buildings. Instead of radiation, we could have been evaluating for flood damage. There were plenty of articles in the newspapers and on television advising all to prepare for "doomsday," but no one I met in the National Fallout Shelter Survey program seemed to expect or fear a nuclear attack . . . Our job was to find places to survive for those poor s.o.b.'s (like us) who couldn't afford a personal backyard shelter.[65]

Foon's thoughts provide something of a summation of issues. For professionals, civil defense was a technical engineering problem; the politics or ethics of the job were never addressed within the bureaucracy of civil

defense. However, the participants in the program were convinced that they were contributing to the broader social welfare of American citizens, especially those citizens who lacked the resources to survive.

The inexpert opinions of those citizens regarding programs of civil defense—or other programs of the welfare state—were rarely heeded. In fact, even the individual opinions of the surveyors were irrelevant to getting the job done. Foon's friend and coworker John Edwards Jr. told OCD representatives in 1969 that he believed "the fallout shelter program was fruitless. Forty days in a fallout shelter would not be enough; ten years was more likely." Nevertheless, he spent two summers on the survey, gaining excellent work experience.[66] In a discussion of the fallout shelter debates, Secretary of Defense Robert McNamara was polemical, yet still democratic, regarding the necessity of advancing civil defense regardless of public opinion:

> One of the by-products of our freedom of speech is that all of us can turn into overnight experts on any subject from baseball to moon flights. And while this may give the experts some pain, the more far-sighted will welcome the interest . . .
>
> The facts about fallout protection, as I know them, are these . . . While fallout shelters would save American lives, no one has suggested how they could kill or harm a single enemy. Thus they can in no sense be considered as a threat to peace . . . The facts of life are that, in today's world, preparedness is part of the price of peace . . .
>
> While the public debate has been stimulating, and altogether in the American tradition, meanwhile the work of developing a fallout shelter system has been moving ahead. Quietly, without fanfare, teams of architects and engineers have been making a nationwide survey of available shelter space—on the sound principle of beginning with what we have . . .
>
> Only one element in this otherwise healthy controversy worries me. A small minority . . . [believes] nuclear war would be so terrible that they would rather die than face the "empty world" outside their shelter. This philosophy is so repugnant to Americans, and so foreign to their heritage, that it almost requires no answer.[67]

And it would receive no answer, as the true Americans and the true experts—here the "teams of architects and engineers" in the employ of the OCD—"quietly" went about their business. There were critics of course, and for McNamara at least, an absence of debate would have been singularly un-American. But he makes it clear that the "expert" denomination depended fully upon conformity to certain "facts" and "principles."

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3. SHELTERING COMMUNITIES

City and Social Planning for Civil Defense

> People, unlike structures, are at different locations depending on the time of day a detonation occurs.
>
> —***Nuclear Weapons: Phenomena and Characteristics*** **(OCDM, 1961)**

By the mid-1960s, millions of fallout shelter spaces had been surveyed, marked, and stocked across the United States in Phases I and II of the national program. It remained for the civil defense establishment to determine whether, in their everyday activities, all Americans had shelter close by and knew where to find it—a problem anticipated in this chapter's epigraph. The quotation suggests, however, that structures, unlike people, are static entities, a presupposition soon to be challenged. Civil defense planners found that properties changed hands, buildings were renovated or demolished, and new construction reconfigured the national landscape. Vital to a functioning system, Phase III of the National Fallout Shelter Program included the continual updating of the National Fallout Shelter Survey to reflect changes in the built environment. More important, Phase III mandated the development of detailed local plans for the augmentation, accessibility, and occupation of shelter spaces. Given the mutability of built environments, and the unpredictability of everyday life paths, matching people with shelters was a difficult task. To ensure the effective and egalitarian distribution of fallout shelters, urban planners were mobilized to use survey data to generate Community Shelter Plans (CSPs) for the nation's neighborhoods. The CSP process traced fallout shelter surfeits, deficits, and fluctuations; mapped routes for accessing shelters; attempted to influence local policy and practice to require shelter development; and assigned and directed populations and trained managers to specific shelters. Local media campaigns disseminated these plans.

The purpose of CSPs was to provide the populace with exact instructions on "where to go and what to do" should the United States come

under attack. This slogan was repeated often by the OCD during the second half of the 1960s, the heyday of CSPs. In the 1966 OCD film, *Community Shelter Planning,* the camera lingers over a document where similar words enframe the civil defense logo (Figure 3.1).[1] Starring a young Gene Hackman as a regional OCD official, this film reveals many of the strategies used to sell CSPs to local politicians, planners, and the public. Together with the local civil defense director, Hackman's character has the specific goal of convincing a skeptical and argumentative county commissioner to support the CSP process. "You know where the shelters are," the latter complains. "What else do you need?"

Hackman responds emphatically: "Where the people are, Commissioner. Not only where they live, that's no real problem. But, uh, where they work, where they play, where they go to school, where they shop. Because people living normal lives don't stay put."

Ultimately, the full range of ludic and consumptive behaviors alluded to by Hackman's character were difficult to map. In practice, CSPs were limited to the more general evaluation of daytime and nighttime populations; the panoptic powers of the state were limited to available methods of data collection, specifically home and work locations. Even the example then elaborated by Hackman is restricted to live/work locations; the civil defense director notes that few employees at the Bucks County

FIGURE 3.1. Film still from *Community Shelter Planning* (Washington, D.C.: Office of Civil Defense/U.S. Army Pictorial Center, 1966). All stills from this film courtesy of www.conelrad.com.

(Pennsylvania) Courthouse, where filming actually took place, live within walking distance of the fallout shelter spaces therein. As the camera tracks down a curving basement hallway animated by chatting strollers, Hackman and the civil defense director narrate how the building has been surveyed, marked, and stocked; a fallout shelter sign and then stacks of water and cracker containers appear on cue (Figures 3.2 and 3.3). Here was the physical evidence of Phases I and II; the film demonstrates how Phase III remained essential to a planned response to Cold War crisis.

Later in the film, Hackman's character makes it clear that the OCD will pay the full costs of the county's CSP. The local planner's eyes light up, and he whispers to the commissioner, "We can make good use of those population surveys. I mean, if they're willing to pay for them, why not?" Subsequent scenes depict this local planner going to civil defense school, then returning to supervise other county employees as they pore over maps (Figure 3.4). Like other federal urban programs of the era, the CSP process required, and paid for, the development of local planning capacity to implement it. Although the birth of North American town planning is often linked to the urban reform and City Beautiful movements of the early twentieth century, as a profession it did not begin to expand until the 1940s. At that time, the U.S. Congress made long-range city plans prerequisites for the transfer of federal funds in support of local development.

FIGURE 3.2. Film still from *Community Shelter Planning* showing shelter supplies in the basement corridor of the courthouse.

FIGURE 3.3. Gene Hackman's character turns to make a point to the county commissioner in *Community Shelter Planning.*

Immediately, there was a demand for people with planning skills and knowledge about cities and their built fabrics to conduct surveys and prepare plans. [2] Architects and others entrepreneurially stepped into these roles. Further, architectural historian Andrew Shanken has shown how the exponential growth of urban planning during and after World War II was supported by a broader culture of anticipation that strove to forecast and shape the future of the nation.[3] Certainly, the optimism of civil defense rhetoric ought to be seen in this context, where envisioning a future after nuclear war testifies to the strong faith in all types of planning—economic, social, and urban—even as it anticipated the chaos of that war's aftermath.

Like architects, urban planners were especially eager to augment their status by associating with defense intellectuals, since the latter enjoyed a reputation for efficient problem solving and scientific project management. Historian Jennifer Light has documented how, at this time, military contractors broadened their scope to apply "defense and aerospace techniques and technologies to urban operations." As the hot war in Vietnam escalated in the mid-1960s, Department of Defense spending on research dropped significantly. Entities like the RAND Corporation and the Stanford Research Institute searched for new clients to supplement their still ongoing work for civil defense. For a variety of reasons, cities

FIGURE 3.4. Scene from *Community Shelter Planning* depicting the local planner at civil defense school.

were targeted to receive the benefits of these consultants' research expertise. The formation of partnerships among defense intellectuals, city planners, and municipal governments effectively redefined urban issues as national security problems.[4] At the same time, but in the opposite scalar direction, Cold War threats were pinpointed to the scale of the neighborhood and block as urban planners developed CSPs.

This chapter demonstrates the ways that civil defense remained, throughout the 1960s, an important lens through which architects, urban planners, and other experts viewed the American city. In addition, community shelter planning imagined what citizens would do in their public shelters during the prescribed two-week stay after a nuclear war. The planning process not only assigned populations to specific shelters but also assigned specific roles in shelter life. These roles were assigned based on civil defense research into the physical and psychological aspects of natural disasters, of "shelter habitability," and of a few design projects that sought to prove that Americans could live together underground in shelter from extreme events and environments. Although CSPs were inspired by Kennedy and Johnson's Great Society rhetoric to imagine a postattack United States where the welfare of all citizens was ensured, CSPs still took up many of the social and ideological assumptions about the city and its populations that characterized 1950s civil defense scenarios. Depictions

of shelter life in 1960s civil defense productions, like many hypothetical attack scenarios before them, took the form of morality plays about good citizenship in the shadow of war.

COMMUNITY SHELTER PLANNING: CONTEXT

A series of preliminary reports on community shelter planning, prepared for the OCD by the Stanford Research Institute (SRI), established the national security context for urban expertise. The "conclusion that CSP is a normal part of (or at the very least a logical adjunct to) urban planning can be stated with conviction," and it was stated numerous times in the different reports.[5] From the tone and discourse of these reports, which were based on pilot studies in the fifty state capitals, many of the SRI researchers evidently were urban planners themselves. In parallel with architecture for civil defense, urban planners would claim Cold War protection as a natural extension of their duties to the city. Therefore, CSPs were informed by contemporary urban planning theories and the organizational models of federal urban development programs already in place and employing planners.

With the CSP program, the OCD joined other federal agencies in sponsoring long-range urban planning by localities. Community shelter plans were modeled on existing programs administered by the federal Housing and Home Finance Agency (HHFA). In particular, the Urban Planning Assistance Program (a.k.a. the 701 Program) and the Workable Program for Community Improvement both provided federal money toward comprehensive preliminary plans "prepared locally for local implementation."[6] As with these comprehensive plans, in the case of CSPs the OCD would monitor minimum standards and the inclusion of work items, but the quality of results were left, for better or worse, to the community itself. The Stanford Research Institute suggested that if federal incentives for fallout shelter construction ever were approved by Congress, a later phase of CSP could parallel the more detailed Urban Renewal Plans, which stipulated intense federal review and guidance so the government could protect its large investments in local built environments. Finally, in their goals as in their title, CSPs mimicked the Community Renewal Program, which in the 1960s began to replace the much-criticized Urban Renewal Plans. With the Community Renewal Program, planning now would focus on people as well as plans, a rather important characteristic for civil defense.[7]

Deciding who actually would do the work for a CSP was often a thorny question. The Stanford Research Institute recommended that the OCD consult regional Army Corps of Engineers offices to determine which planning body made geographical and political sense in a particular area. This could mean city or county departments of planning, regional planning commissions, or, in a small, urbanized state like Rhode Island, the state government planning body. The use of existing planning agencies would save the OCD the costs and complications of coordinating or performing the work itself on a national scale, though the quality of local data, maps, and skills was wildly inconsistent among planning departments and commissions. Due to a lack of staff and expertise, it was assumed that these bodies would subcontract to independent planning consultants. Being planners themselves, and fairly up front about promoting their profession, SRI researchers for the CSP project specifically recommended against subcontracting to the architecture and engineering firms that had conducted the National Fallout Shelter Survey. Especially in those places where population exceeded shelter capacity, the SRI concluded, authentic urban planning expertise would be indispensable.[8] In asserting their status in the CSP process, planners opined that neither architects nor engineers were equipped to achieve the OCD's objectives. Still, SRI researchers worried about the capacity of the nascent planning profession to handle extra demands. The HHFA already required that professional planners be employed by cities seeking federal funding for urban programs. However, as registered in the discrepancy between federal appropriations and actual disbursements for those programs, there was "a substantial shortage of professional planners and a formidable backlog of work facing the profession."[9] New planners would need to be recruited, trained, and mobilized.

Not all civil defense bureaucrats accepted the premises underlying urban planning. At one point in a report titled *Local Planning Capability and the CSP Program,* an anonymous OCD reader, most likely a member of the old guard from the days of the Federal Civil Defense Administration, has scrawled, "TEN years AGO AND MORE, WE WERE SAYING ALL THIS!" Even so, the main thrust of this reader's frustration with the report is not its lack of originality but its party-line commitment to the central tenets of planning itself. For him, the report "hides a hidden monistic assumption" that expert urban and regional planning is better than local initiatives or self-help; that adjacent urban and suburban environments and systems "must be planned and managed on a broader scale for effective administration." "WHY?" he exclaims several times, underscoring the

researchers' imperative verbs. The anonymous critic seems to be resisting the inclination toward collectivist language and large-scale government intervention that pervaded both urban planning and the OCD programs of the 1960s. The SRI report states unequivocally that the "benefits derived from undertaking a civil defense program accrue to society as a whole, rather than to individuals . . . Therefore, the urbanized area as a whole, rather than certain segments of the total pattern, must be considered the area of benefit." In contrast, and pointing out the non sequitur of those statements, the anonymous critic avers that the "benefits also accrue to the individual whose life is saved!!"[10]

This conflict between individualism and the collectivism of planning strikes at the heart of the continuing ambivalence about civil defense in U.S. culture—how could shelter for all be arranged while maintaining the sanctity of private property and personhood? It was a contradiction equally fundamental to the history of urban and regional planning in capitalist democracies. Building owners, at least, had been largely convinced to allow emergency public access to their private properties. Would private citizens conform to such planning of their movements and decisions?

COMMUNITY SHELTER PLANNING: PRACTICE

Despite the many obstacles, the SRI and the OCD remained hopeful that given enough time, planners and local civil defense personnel could produce CSPs for the entire nation, thus allocating citizens to available shelter spaces. The aim was that each locality would develop "a plan which—because it is workable and practical—makes sense to the citizenry and their elected representatives and is credible to them."[11] In other words, the CSP process would be another attempt to make civil defense seem real, functional, and rational by inscribing it in the everyday built environments of the nation. To manage the CSP process, the OCD envisioned the establishment of two committees in each locality: a CSP Policy Council, chaired by the mayor or equivalent personage, to coordinate government decisions, community resources, and public information; and a CSP Technical Advisory Committee, chaired by the city planner assigned to civil defense duties, to provide expertise and assistance in implementing plans. Importantly, both committees would be managed by an executive secretary who was also the director of the local civil defense agency. The OCD saw this person as a professional bureaucrat operating within the context of managerial and efficient modern governance. As the booklet *Committees*

for Community Shelter Planning stated, the growth of city management "as a professional type of work to which professionally trained people now can aspire, is a mark of the changing nature of today's government."[12] If cities could be managed on a daily basis, civil defense would be merely an extension of that process into disaster planning.

To match individuals with local fallout shelters "in the best possible combination" clearly was a tremendous task for the planning profession, especially in the area of information management. The OCD explained that the data collected

> pertain to building types and construction, housing, traffic arteries and flow, transportation facilities and equipment, shelters and their availability to the populace, locations of monitoring stations, fire and police capabilities, availability of various kinds of immediate-use resources, and many, many other significant items of information necessary to emergency preparedness.[13]

U.S. census data—decadal rather than daily—would be the "significant item of information" that tracked mobile populations. CSPs were based on two demographic statistics, daytime and nighttime populations, and no consideration was given to behaviors outside the residence/workplace binary. To effect this rationalization of the city, all data would be keyed to standard locations, as was done in the Shelter Survey. Using federal government electronic computing capacity, programmers developed specific techniques for the CSP process, which were enhanced by data-processing advancements associated with the 1970 census. In particular, drawing on the explosion of mathematical transportation planning in the 1950s, computers were mobilized to model traffic movement according to population and land use patterns.[14]

Community Shelter Plans would direct specific daytime and nighttime populations to specific fallout shelters within their "shelter drainage area." This metaphor borrowed from environmental science would naturalize the results of the planning process. Drainage areas would be "determined by either the capacity of the shelter(s) or the estimated travel distance as modified by the barriers to movement and other local terrain features."[15] More precisely, shelter allocation would result from a combination of these two factors, an equation balancing vectors of accessibility (commuting time) and total capacity (shelter space). If possible, no allocation would be farther than a fifteen-minute commute; in built-up areas where traffic jams would be a problem, it was assumed that this would be a pedestrian commute.

Another aspect of the CSP process was to deploy planning instruments like zoning, building codes, and ordinances to encourage fallout shelter construction in deficit areas. In many jurisdictions, zoning disallowed "spartan" shelter, while certain egress and ceiling height requirements limited the usefulness of some basements. The CSP methodology would identify these local impediments, allowing representatives to contact responsible bodies to propose variances and initiate legislative change. For example, the CSP for Michigan's tri-city area included a draft "Recommended Local Ordinance on Incorporating Shelter in New Public Structures," and it called for planners to encourage local school boards to enact official policy statements requiring fallout protection in new schools, the most likely public buildings to be erected in the near future around Lansing.[16] Likewise, planners and civil defense officials involved in CSPs worked toward local adoption of the OCD's *Suggested Building Code Provisions for Fallout Shelters.* This was an excruciating process: the state of Minnesota ratified the *Provisions* as an adjunct to its building regulations only in 1971, not that long before the OCD's successor agency adopted a policy of neglect for the fallout shelter program.

Arcane restrictions on shelter and glacial bureaucracy would not be the only difficulties encountered in the practice of community shelter planning. First of all, the entire program relied on the accuracy and availability of data from the National Fallout Shelter Survey. But a CSP pilot study conducted in the state capitals (where one might expect a higher level of civil defense organization and concern for security) found numerous problems: survey data had not been updated since first collected; Phase II data were missing or indicated discrepancies with Phase I; local civil defense offices never received printouts of survey data for their locations, or had not bothered to keep them; and if they did have the printouts, local officials (and the SRI researchers as well) had not been trained to interpret them.[17] A preliminary analysis for the Minneapolis–St. Paul CSP confirmed these findings, and added a few more demographic dilemmas. In particular, these planning consultants noted that U.S. census data were already a decade out of date in 1969, and that Minnesota privacy law precluded the aggregation of employment data by site. Moreover, much available data were not organized according to the standard locations used by civil defense.[18] John Edwards Jr., the engineering student who worked as a Shelter Survey technician in 1969–70, was assigned to update the information for St. Louis County. He found "some inaccuracies in the first Survey," particularly in dimensional measurements. In determining the

footprint of a fallout shelter, a few feet of error in *xy* dimensions could multiply quickly into a grave miscalculation of capacity. The potential of overcrowding, or of turning people away from shelters mistakenly thought to be full, would undermine the rational process of CSPs, which promised a mathematical equation of people with spaces. Finally, in big cities and rapidly developing suburbs it was a full-time job just to keep on top of shifting shelter data and the condition of supplies. In Boston—which, like so many U.S. cities in this period, was experiencing massive inner-city redevelopment—the civil defense administrator complained that "in addition to already existing logistical problems, the urban renewal program has reduced the number of potential shelters already established and stocked with supplies, resulting in the additional burden of retransfer of supplies from buildings to be demolished."[19] The irony is that urban renewal had been touted as the ally of civil defense in the 1950s, when slum clearance would create firebreaks and encourage population dispersal. Now, redevelopment just created hassles for shelter planners.

As with most CSPs, the planning consultants for the Minneapolis–St. Paul metropolitan area CSP found a surfeit of shelter capacity in downtown areas relatively inaccessible to large, suburban, circadian populations of children, homemakers, commuters, and dispersed workers (Figure 3.5). A "deficiency of bridges" over the three main rivers, their tributaries, bluffs, and marshes, made mass movement in a short time "an impossibility."[20] The consultants generalized the problem rather dramatically: "Many natural physical barriers have been overcome by man. However, in doing so, he has created physical barriers of another kind" (25). Pointing to the profligate land use patterns associated with what is now commonly called sprawl, they concluded that barriers like freeways, airports, rail yards, cemeteries, major industrial sites, and other large fenced areas will "control allocation processes" (21). Ultimately, prefiguring Twin Cities commuting today, the planners found that the only solution was vehicular movement to shelters, a blatant contradiction of OCD recommendations. Assuming three persons per vehicle, and researching road capacity, average possible speeds, and amount of terminal parking space, they calculated the number of people who could evacuate *into* the central business districts of the Twin Cities. Under ideal conditions, the planners proposed that in one hour (twice the OCD-allotted warning time for CSPs), some sixty thousand people could complete this reverse evacuation into the "shelter belt." Given the preoccupation with center city targets in 1950s civil defense, this was a radical proposal. Of course, it only makes sense in

the context of a fallout shelter program. The direct hit of an H-bomb, or of several smaller atomic devices, anywhere within the metropolitan area would have immediately rendered the plan irrelevant. Nevertheless, much effort, expertise, and expense went into producing plans and publications to reassure U.S. citizens that there was—or at least could be—shelter for all. Unfortunately, in this case, even the solution based on ideal conditions would have been adequate to account for less than 10 percent of a shelter deficit totaling more than seven hundred thousand spaces in Minneapolis–St. Paul suburbs.

Inadequacies of the process aside, civil defense authorities advised citizens about local CSPs in a number of ways, such as through mass mailings of map booklets or by maps printed in the information pages of the telephone directory. Community Shelter Plan publications for the

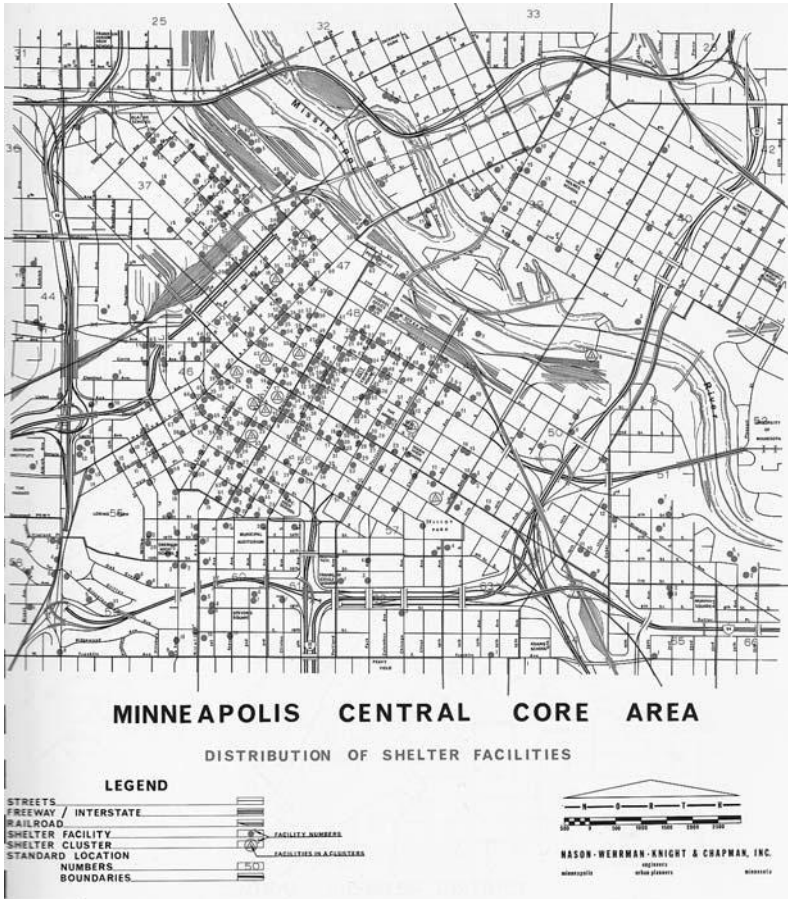


FIGURE 3.5. Map of downtown Minneapolis demonstrating that available shelters become sparse even within blocks of the core. Dots indicate public fallout shelters, and inscribed triangles indicate a cluster of shelters. Also shown are standard location code numbers and boundaries. From *Community Shelter Plan, Seven City Metropolitan Area, Minneapolis–St. Paul, Minnesota: Step 1A, Preliminary Analysis,* prepared by Nason, Wehrman, Knight & Chapman, Inc. (March 1969).

Texas counties of Dallas and Denton illustrate the typical forms of information distributed to the public. Printed on newsprint in three colors, the first publication addresses itself directly "to the citizens of Dallas County: READ . . . AND KEEP THIS OFFICIAL PUBLICATION . . . IT COULD SAVE YOUR LIFE!" Reflecting the representative character of U.S. politics, the cover of the document used the possessive pronoun "your" to highlight citizens' investment in the CSP.[21]

As inside most CSP publications, the whole of Dallas County is divided into areas, then area maps delineate color-coded "shelter drainages" accompanied by a numbered list of shelters therein (Plate 8). Significant natural and built barriers, which carve up the space of the city into standard locations, are depicted on CSP maps for the orientation of the users. Citizens could find their location, match it with a public shelter within the demarcated drainage, and memorize their emergency destination for when the sirens sounded. Notably, while the Lansing, Michigan, CSP had asked users to disaggregate their own day/night and live/work locations from multiple maps, these later Texas plans have simplified the instructions so that citizens are told to find shelters near where they live, or where a person "finds himself" at the moment of the emergency. Presumably, the CSP publication might be kept handy for consultation in the heat of the moment. Certainly, for neighborhoods with large numbers of fallout shelters, like central business districts or university campuses, additional inset maps at a street scale testify to a surfeit of protection; almost anywhere one turned one should find the familiar black and yellow signage of safety.

Immediately apparent on larger area maps is the amount of white or otherwise blank space outside the dense shelterbelts: large sections of cities and counties lack public shelters. In fact, instructions for citizens to determine which shelter they were assigned to begin by drawing attention to deficit areas; citizens in these areas were expected to "improvise" shelter, all the while tuning to civil defense radio broadcasts to gauge whether there was time to commute to a public shelter in a different drainage. Improvised shelter might include the kind of basement and backyard shelters formerly promoted by the civil defense establishment, or it could mean "expedient shelter" in vehicles, ditches, root cellars, or other spaces that could be modified by piling up earth, scrap lumber, or any fallout-attenuating material close to hand. But even in sparsely populated areas of a CSP district, citizens still may have found that the planning process had taken them into account. The CSP for Lane County, Oregon, micromanaged shelter allocation to the specific household on some rural

routes.[22] In other CSP districts, officials distributed handy decals to be posted on the front door jambs of homes, indicating to residents the address of their assigned public shelter location: exactly where to go when the sirens sounded.

OCCUPYING PUBLIC SHELTERS

When they arrived at their assigned fallout shelter, citizens could expect to find supplies and a social structure already in place. Each shelter would be under the direction of an OCD-trained shelter manager—the OCD trained ten thousand of them in 1966 alone, a number that included two thousand shelter management instructors able to offer further courses.[23] Ready to take their posts at the sound of an air raid siren, these managers would receive and register their shelter's occupants, oversee the distribution of provisions, settle disputes, counsel anxious shelterees, and communicate with government authorities regarding the safety of the outside environment. In large enough shelters, the shelter manager could delegate duties such as security, first aid, recreation, communications, and food dispensing to other occupants who seemed responsible and appropriate. The registration forms each occupant filled out upon entering the shelter would allow the manager to determine who had the necessary skills and experience for these roles.

To see the way civil defense planners envisioned the management of spaces and citizens, one could view the 1965 OCD film *Occupying a Public Shelter*.[24] Melodramatic music and acting characterize this portrayal of shelter life against a backdrop of whitewashed brick and concrete block (a rather different setting from the dirty basement fallout shelters I have visited). The film set and blocking suggest a fully managed space. As the shelter manager greets them and hands out blank registration forms, occupants enter the shelter in an orderly fashion, in single file with no panicked rushing (Figures 3.6a and 3.6b). In this entrance scene, a prominent wooden desk with lamp and file drawer stands next to the manager, clearly marking the shelter as a controlled space; the location of the desk suggests the reception area of an institution. In another room, the shelter supplies are perfectly stacked and inventoried; medical supplies are locked behind chain-link screens in a well-organized infirmary. In this fictionalized portrayal, the basic federal supplies (crackers, water, commodes, and first aid kits) have been supplemented presumably by generous local civil defense officials. For instance, the federal government did not supply the cots or

FIGURE 3.6. Film stills from *Occupying a Public Shelter* (Washington, D.C.: U.S. Army Pictorial Center/Civil Defense Staff College, 1965). (a) Entering the shelter; (b) Shelter manager greets and registers people as they arrive at the shelter.

blankets used by the occupants, or the radio console used to communicate with authorities in other shelters. In addition, because the shelter space is unencumbered by competing peacetime uses that might be expected in a typical building (for example, storage or offices), it seems that the film depicts a purpose-built shelter, a space fully dedicated to citizen welfare. In that, the film ignores the fact that few purpose-built shelters were ever constructed in the United States, and that the civil defense program relied on dual-use space found in existing buildings.

As always in civil defense propaganda, gender and race determine the roles played in *Occupying a Public Shelter*. The two lead roles, the shelter manager and his designated security officer, are cast as authoritative, middle-aged white men, the latter being a former military policeman. The nurse and food manager are white women, the latter being a "grocery store clerk topside." The shelter manager notes the "emergent leadership" of a younger white man with a penchant for consoling people and appoints him "religious counselor." A token African American serves as radio operator; he remains nameless, unlike the shelter manager and others assigned important roles in the shelter. Further, he never appears in group scenes that include white women or children. As he enters the shelter in the opening scene, he is the only character to shake hands with the shelter manager, who then directs him to the radio console. While this indicates that he previously was trained as a radio operator and has been assigned to the shelter, the handshake also welcomes the African American within the space, neutralizing the threat he may represent to many white viewers of the film. Calm and competent white men would remain

in management positions, while others would conform to their expected roles. Civil defense officials hoped to reproduce the status quo in post-attack social relations.

At one point in *Occupying a Public Shelter,* the genial shelter manager is making his rounds, assigning tasks and counseling his charges. A whiny woman in the group complains to him that both the nuclear war and their confinement in the fallout shelter were the fault of the U.S. government (Figure 3.7a). The shelter manager, as the representative of federal authority, counters her accusation with levelheaded reason: first of all, the "enemy" started it, thus establishing America's innocence of aggression; second, at least the U.S. government had provided protection for its people. That is, the government was looking out for the welfare of citizens by developing a civil defense system; it did this for the people because, as the shelter manager argues, in America "we are the government." Speaking here for the OCD, the shelter manager seeks to inspire his audience with a language of shared sacrifice and shared survival. Despite minor conflicts that could arise among occupants, the crucible of the fallout shelter could forge and temper national identity. A properly managed shelter experience had the potential to produce new and stronger relationships among fellow Americans.

It is important to note that civil defense officials deployed the term "shelter manager" rather than shelter leader or director, captain or commander. The term allowed civil defense to use the language of business to legitimate the hierarchy of power within the fallout shelter. That is, these shelter groups would not be ruled by political or military leaders, but merely managed within an organizational structure familiar to them from everyday life and work. Nonetheless, *Occupying a Public Shelter* is no different from other civil defense propaganda in its emphasis on "rules and regulations" after an attack. As the narrator of the film intones, the shelter manager's "legal status and authority must be made clear to the occupants." A nuclear war would result in the declaration of martial law and the suspension of traditional democratic forms of government in the United States.[25] Groups of people in fallout shelters would become political units with unelected leaders, or rather, managers. This tension between individual legal authority and the negotiation of plurality seems inherent to the role of shelter manager. In the realm of civil defense, at least, good management seemed to be about striking a balance between control and conciliation, between rigid structure and flexible practice.

Indeed, a series of consultants' reports to the OCDM between 1959 and 1961 had confirmed this theorization of shelter management. Dunlap

& Associates came to the conclusion that while unpredictable shelter situations and populations would necessitate that the "management system permits a great deal of 'give'. . . a substantial amount of authoritarianism cannot be avoided." Still, it is a specific form of authority that is envisioned for the densely populated environment of the fallout shelter, where recourse to due process, punishment, or force would be limited. "Hence," the researchers conclude, "it is especially necessary to encourage social pressures and not to depend on overt show of power to maintain tranquility in the shelter."[26] According to the biopower philosophy of civil defense, survival would depend on self-discipline, with a little prodding from others. The shelter manager and his appointees, as well as unappointed shelterees, would keep each other in line through observation, negotiation, and friendly reminders. In one particularly telling scene in *Occupying a Public Shelter* (Figure 3.7b), a gentleman leaning on the radio set, chatting with others, pulls a pack of cigarettes out of his pocket and goes to light one. Out of the ether, the slightly scolding voice of the film's narrator addresses him: "The shelter is secure for the night. An ideal time for a smoke, but smoking is permitted only when the shelter management determines the ventilation in the area and oxygen requirements." The man, seemingly in direct response to this interjection, quickly puts away his smokes.

Organized and tightly scheduled activities—like the calisthenics and sing-alongs also depicted in the film—would ensure a level of group participation that would prevent the development of dissatisfaction or unrest in the shelter (Figures 3.8a and 3.8b). In fact, eating, sleeping, and recreating

FIGURE 3.7. Stills from *Occupying a Public Shelter:* (a) Shelter manager debates with woman in shelter; (b) "An ideal time for a smoke."

FIGURE 3.8. Stills from *Occupying a Public Shelter:* (a) "Frère Jacques" sing-along; (b) Shelter calisthenics.

often would be governed by the need to reconfigure the shelter space for each activity. Significantly, the architecture of the fallout shelter would be essential to preserving social order. Dunlap & Associates felt obliged to defend their focus on configuring the physical plant: "In our perspective, these designs are integral to the management procedures suggested; the designs are expressions of management." Architecture would provide the framework that would limit and guide the actions of occupants, thus avoiding or ameliorating "certain problems for management."[27]

In addition, particularly large shelter complexes might be divided into units according to outside neighborhoods. An early report on community shelters in Livermore, California, stated: "Persons already living together in neighborhoods have some degree of cultural unity and by the very fact that they reside in the same areas have compatible social practices to some extent and will stand the best chance of working in harmony and choosing a leader acceptable to all."[28] Unfortunately, this vision of harmony breaks down later in the report. Under the heading "Unauthorized Occupancy" is a discussion of how overcrowding can be resolved "after the peak fallout period" of twenty-four to forty-eight hours; among others, "older persons who will not suffer genetic effects can leave the shelter to relieve the congestion." The immediately following section of the report then "anticipates that the situation may call for the declaration of martial law . . . [and] the complete cooperation of the citizens. The citizens must recognize those in authority or those who have specialized duties," such as civil defense.[29] The tone of the Livermore report reflects that of civil defense and CSP discourse more generally. With good management of the

city and the shelter, even nuclear war and its fallout can be endured with aplomb, despite the difficult choices presented by "lifeboat ethics." But the threat of martial law—total planning control over environments and relationships—always lies in the background. Authoritarianism backed up a sense of community; from the shadows of fallout shelters, panoptic surveillance ensured everyday self-discipline.

SHELTER HABITABILITY RESEARCH

Civil defense planners were fond of pointing out that hypothetical attack scenarios were based on hard research. *Occupying a Public Shelter* clearly looked to the Dunlap reports, which recommended, among other things, training the shelter manager, establishing a "prearranged position" from which he controlled the "shelter-entering phase," and using white paint throughout the shelter for cleanliness, illumination, and "to help establish an institutional atmosphere with its implications of organization and competence."[30] Civil defense publications, drills, and the shelter manager training program all drew on disaster studies and other social science research on the long-term group inhabitation of confined spaces. The Disaster Research Group of the National Academy of Sciences, and its newly formed consultant Panel on Shelter Habitability, assembled pertinent research in several publications of the early 1960s. The papers in *Human Problems in the Utilization of Fallout Shelters* reflect on studies of, for example, submarine habitability and polar isolation; psychological and social effects of internment and of isolated radar bases; sensory deprivation; historical shelter experiences; and recent occupancy tests. Plugging his field's role in defense thinking, one researcher exclaimed that "survival may very well be possible only if some of the ablest minds of our society find effective employment in social science investigation."[31] The American Institute of Architects was saying much the same thing about architectural research. Hard scientists were more skeptical. Surveying shelter habitibility studies in 1962, two reviewers in the *New England Journal of Medicine* found a "remarkable lack of well controlled hypothesis-testing research," which to them seemed "essential" groundwork to be completed before a shelter program was "embarked upon."[32]

Regardless, a study of family sheltering published in the *Archives of General Psychiatry* noted the immediate influence of habitability studies: "Partly as a result of these experimental findings, a rigorous screening process has been adapted in selecting candidates for space flight or

submarine crews." But now that the civil defense establishment was proposing that all Americans take to fallout shelters for two-week stays, "an entirely unselected population" would be "subjected to the stress imposed by an environment severely restricted in the sensory and social stimulation which it provides." Despite many behavioral uncertainties, the researchers "assumed that if survival is the reward for prolonged stay in an underground fallout shelter, most individuals would be able to tolerate the situation."[33] Their conclusions were inspired by an experiment in which a family of four spent the requisite fourteen-day time period in a private shelter, a stunt sponsored by a Houston radio station. Pre- and postshelter psychological assessments found that the "tomb-like existence" (56) resulted in a "disruption in spatial perception" (60) and imaginations overtaken by visions of the world "as a dark, obscure, and bleak place" (59). At the end of the experiment, though, the mother, "attractive, verbally expressive, and . . . clearly the family leader" (55), conveyed confidence: "We leave here with the personal knowledge, that if and when it becomes necessary for our family, or any other American family to seek refuge, for personal safety in a fallout shelter—it can be done!" This family "togetherness" (62) forged in the fallout shelter would be available to all Americans; as always, family unity would be a model for national unity.

Other habitability studies sponsored by the OCDM and OCD, whether using families or groups of up to four hundred subjects, tended to reach similarly optimistic conclusions. Researchers suggested the main "human problems" were caused by "environmental stress," by which they meant psychological reactions to physiological privations like excessive heat and humidity, perpetual darkness, limited food choice, and a lack of water for washing. Proper ventilation, electricity generators, and the use of, for instance, water normally stored in building heating and cooling systems could greatly enhance habitability. Further, several studies indicated that the presence of "trained and designated shelter managers increased the subjects' adjustment to shelter conditions and enhanced their attitudes toward shelters, civil defense, and people in general."[34] Indeed, civil defense supporters believed that social science research into shelter habitability could furnish more than just technical planning guidance. It had the potential to humanize the civil defense program itself, to make the program personally meaningful to apathetic, skeptical, and pessimistic citizens. After describing successful "laboratory research" on habitability conducted by the U.S. Navy and the University of Pittsburgh, one researcher argued for the propaganda role played by these studies:

> The fallout shelter is the first tangible evidence that something can be done. As such tangible evidence, it can become a potent weapon against the fatalism and gloom that has pervaded so much of our thinking. I have never seen so much spontaneous general interest in a behavioral sciences research project as there is in the [Pittsburgh] study I described briefly to you . . . Perhaps the fallout shelter is the rallying point and habitability research a mechanism for generating the kind of popular interest and support that has so long been lacking.[35]

Extrapolated through the drills and morality plays of civil defense, social science could help people imagine themselves living and thriving in fallout shelter spaces that might otherwise seem empty, depressing, or "tomblike" containers.

ENCAPSULATED COMMUNITIES

With their basic component being the walkable "shelter drainage area," CSPs clearly drew on the well-established town planning concept of the "neighborhood unit." This planning theory imagined communities in relation to the child's "walk to school" and the parents' walk to shops and transportation hubs, on circulation systems designed to separate them from automobiles. First theorized in the 1920s by sociologist Clarence Perry, a number of "neighborhood unit" developments were designed by Henry Wright and Clarence Stein during the New Deal era. A large amount of public space, such as greenbelts within and among several neighborhood units, would foster the growth of community spirit, as a building block of national identity among heterogeneous American populations. As critics and historians have argued, however, the utopian and patriotic impulses indicated by these plans never survived the political and economic conditions of their physical development. In practice, neighborhood unit plans tended to be built or used as homogeneous, automobile-oriented communities, like any other suburbs.[36] Racial covenants, highway construction, and class privilege in the free market contributed to make them so, regardless of whether this was the inclination of their residents. Likewise, the delineation of CSP drainage areas would ensure the homogeneity of the populations assigned to most public fallout shelters. The barriers to movement that would determine CSP watershed boundaries, such as freeways, rail corridors, industrial zones, and topographic features, had always sorted American communities by class and race, and they would continue to do so in the Great Society of the nuclear age.

The CSP initiative would not be the first time urban planners had engaged with the problem of "a protected community for the nuclear age." As the Cold War escalated toward the crises of the early 1960s, a major design study on this topic was conducted by the architecture and city planning students and faculty at Cornell University. A hypothetical company town was projected for the Schoharie Valley in upstate New York, far from the presumed city center targets of the previous decade. Designed according to the best knowledge of defense intellectuals, and the best practices of urbanists at the time, the Cold War parameters of this studio exercise demanded that all functions and services would be duplicated in protected areas underground (Figure 3.9). In its scale and approach to movement, the solution was influenced by the neighborhood unit concept. The design ensured that no homes would be "more than five minutes, or 1500 feet, from a shelter entrance" since the "conflict of auto and pedestrian movement in an emergency could create a disastrous jam."[37]

An impressive list of organizations, including the OCDM, the New York State Civil Defense Commission, the state's Office of Geology and Department of Commerce, and the International Business Machines Corporation (IBM), all contributed expertise to the research and development of the protected community. The results were published in a widely distributed booklet and disseminated through press releases from the Cornell

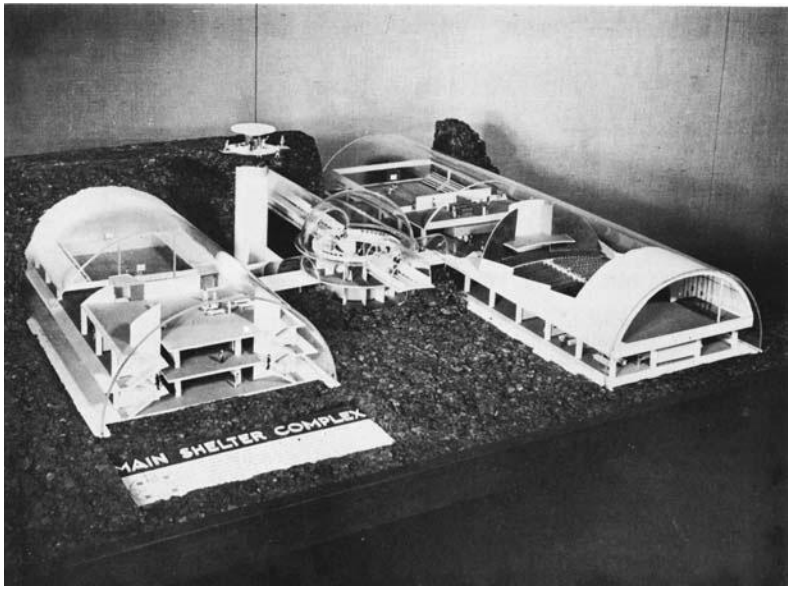


FIGURE 3.9. Model of the Main Shelter Complex, designed for beneath the city center in this studio exercise. From *The Schoharie Valley Townsite: A Protected Community for the Nuclear Age* (Ithaca, N.Y.: Cornell University, College of Architecture, 1960).

University News Bureau, which described the exhibition of the results in an auditorium at the United Nations. The booklet is filled with photographs of defense intellectuals at work: white men in white shirts and ties poring over plans and models, pointing out significant aspects of the design (Figure 3.10). For the Cornell group, the conclusion gleaned from this studio exercise was that urban design for the Cold War—even subsurface urbanism—was not radically different from peacetime planning. Rather, it was just that each "normal planning problem was multiplied in the effort to make this community operative during and after a nuclear attack."[38]

Making communities operative underground was a brief, though telling, obsession of design and defense experts during the early Cold War. The process of imagining new subsurface communities performed at least two significant functions in the postwar United States. First of all, it represented a way for Americans to manage the fears of nuclear annihilation concomitant with their nation's foreign policy objectives. Second, the discourse of subsurface urbanism was a way for planners and citizens to explore and justify new forms of encapsulated community. These "cities" represented a fantasy of national consensus possible only in the restricted spaces of the underground. They were very literal examples of what historians of the period have called "containment culture." That is, the designs for underground cities were significant because of their spatial limits;

FIGURE 3.10. Cornell city planning professor points to the city center on the site model. From *The Schoharie Valley Townsite*.

everything necessary for a functioning community had to be accommodated within their confined tunnels and caverns. Successful underground cities could demonstrate essential elements of contemporary urbanism like engineered traffic circulation and other technological solutions to urban ills. Further, the designers of these encapsulated communities imagined their inhabitation by white, male, middle-class citizens, and sometimes their families. The elements of urbanism that these normative Cold War citizens could do without were conspicuously absent from underground cities. Public space; polluting industries; working women, minorities, and other nonnormative subjects: these were to be left behind in favor of a new encapsulated urbanism.

Recently, in an interview with journalist Tom Vanderbilt, one of the Cornell project authors retrospectively dismissed the Schoharie Valley project as simply another studio exercise.[39] On the contrary, though, the project's broad support and dissemination indicate that its themes were compelling at the time. The project leader, F. W. Edmonson, used it as a springboard to lecture engagements and outside consulting. Speaking to a "conference on design for the nuclear age," sponsored by the Building Research Institute of the National Academy of Sciences in Washington, D.C., Edmonson argued that protected cities "can and will be built." He continued: "Only a gleam in the eye of a visionary professor? Not quite, since this is the published intent of a group of hardheaded businessmen for a chosen site." Describing a proposal for which he served as technical adviser, Edmonson suggested that the administrative capacities of the "old cities" of the northeastern United States could be better accommodated in a singular

> great governmental core city surrounded by its commercial, industrial and residential centers such as New York, Boston, Buffalo . . . It is a compact city . . . completely enclosed, a controlled environment. It has a high specific gravity since one-third of the city is underground. This city is nearly autonomous . . . Executive decisions are easily made by the help of "information technology" equipment.[40]

Ultimately, the modernist dream of total environmental and political control described by Edmonson never got built at an urban scale.

Many planners, critics, and citizens resisted this rarefaction of urban space and decried its underlying symbolism of a return to the caves. Urban decentralization might be conscionable, and seemingly inevitable anyway,

but burrowing underground was akin to devolution for many critics. The most vocal was humanist architecture critic and historian Lewis Mumford. His monumental 1961 survey, *The City in History,* builds from the inhabitation of caves toward a modern urban politics that drives humanity back underground. Mumford explicitly confronted historical theories that war is in humankind's nature and therefore inevitable. Rather, war was a corollary of cities and civilization, of culture. In the twentieth century, technology, and especially nuclear technology, had outstripped its ability to be controlled through social or political means: "The monstrous gods of the ancient world have all reappeared, hugely magnified, demanding total human sacrifice. To appease their super-Moloch in the Nuclear Temples, whole nations stand ready, supinely, to throw their children into his fiery furnace."[41] For Mumford, subsurface urbanism was a primary symbol of this regression: "Unfortunately, the underground city demands the constant attendance of living men, also kept underground; and that imposition is hardly less than a premature burial, or at least preparation for the encapsulated existence that alone will remain open to those who accept mechanical improvement as the chief justification of the human adventure." What began in the nineteenth century with the burial of urban infrastructure for function and aesthetics, had become in the nuclear age the burial of all urban activities: once the "authorities [had] sedulously conditioned their citizens to march meekly into cellars and subways for 'protection.'"[42] This condemnation of Cold War, subsurface urbanism immediately precedes Mumford's devastating critique of suburbia, establishing a link between the vertical encapsulation of community and its horizontal corollary. These two vectors of encapsulation parallel the spatial relationships of civil defense: sheltering in place (typically vertical) and urban evacuation (horizontal).

These links were made a virtue by the proponents of encapsulation. At Schoharie Valley, horizontal dispersal away from metropolitan centers was complemented by vertical evacuation to a duplicate community. The underground spaces mimicked the aboveground urban design. As the Cornell team stated, the "hardened central complex is also the town's cultural center."[43] The town hall on the public plaza would be converted for civil defense functions, its underground levels becoming a secured command center for the continuity of government. Next door, the subsurface cafeteria and gymnasium at the school complex would be used for emergency mass feeding and hospital space in a disaster situation, nutrition and physical fitness giving way to survival and sickness.

If the Schoharie Valley Townsite and other projects at a similar scale remained academic, another example of subsurface urbanism was noteworthy for actually being built. Camp Century, also known as "the City Under the Ice," was a U.S. Army Corps of Engineers project that planted a scientific research station in the barrens of Greenland. Despite the project's present obscurity, at the time of its brief operation Camp Century was widely covered in the media. The heroic story of its construction under the ice inspired three books from popular publishers, feature articles in *National Geographic* and the *Saturday Evening Post,* and a CBS television documentary. The story evidently struck a chord with Americans, not just for the romance of its northern location and rugged main characters, but also due to its implications for the city of the future. The publications foregrounded the idea that Camp Century represented a new mode of urbanism: all of them deployed some form of the phrase "City Under the Ice." They emphasized how the community of cut-and-cover tunnels buried in the ice cap boasted a "paved Main Street" off which were located all "the facilities of a modern city," such as a laundry, gymnasium, garage, library, hospital, street lights, flush toilets, and "the first hot showers ever installed in a glacier."[44] As one of the authors wrote, "Life inside a mile-thick glacier is not too different from that in many small U.S., Canadian or British towns."[45] This cold-climate city would offer lessons for Cold War urbanism (Figure 3.11).

While a number of the journalists jokingly mentioned the parking problem posed by giant snowcats and bulldozers in the narrow streets of Camp Century, most urban pathologies were noticeably absent from descriptions of the "arctic metropolis." Why were crime, competition, and commuting congestion nonexistent there? First of all, there was good municipal government. Community leaders were educated, white, male military officers, whose upstanding characters and full-blooded Americanness are carefully delineated by the writers, one of whom compares the commanding officer to a city mayor. Further, depictions of the camaraderie among the "rugged" enlisted men, also known as the "citizens" of this homosocial polar polis, imply that liberty, justice, and equality were ensured. No doubt, good neighborly relations at Century were supported by the psychiatric screening each enlisted man received prior to assignment there. Homogeneity of purpose was engendered by a male code of conduct common to military detachments, but also imagined for U.S. culture more broadly. Families remained at home, stateside. Each author was careful to note the absence of women, who may have disrupted this

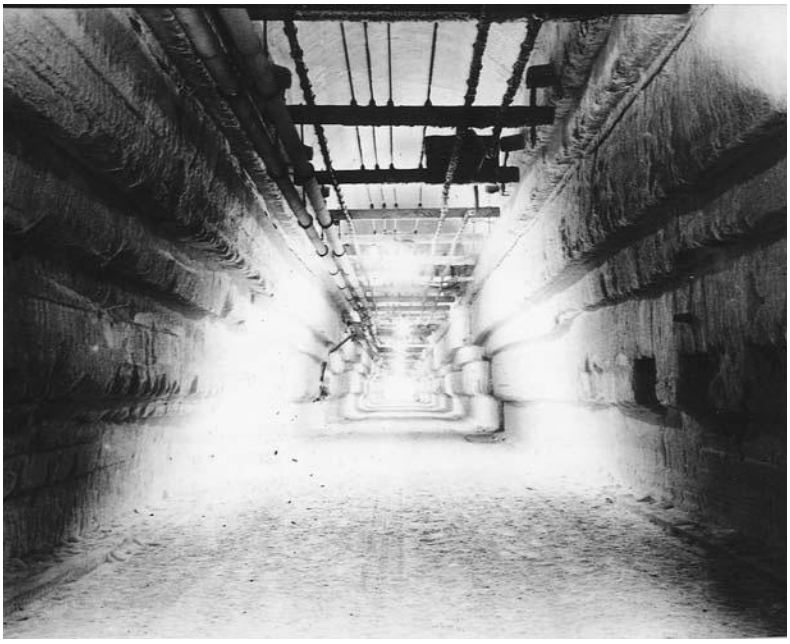


FIGURE 3.11. Main Street, Camp Century. Photo no. 588387; RG 111-SC; National Archives, College Park, Maryland.

idealized urbanism. In this subsurface city, there were "no women around to complain if the lettuce in the salad isn't quite the crispest and freshest or the majority of the food is canned or frozen." Still, despite its rather limited demographics, this writer concluded that Century was a "cool but comfortable American community in miniature."[46] Depictions of it never alluded to tensions stemming from the absence of women, but there were dangers to masculinity in such a closed society: "We know that men can turn soft . . . as a result of the sedentary existence," warned the commanding officers; "they could turn into fat, pale slugs."[47] Masculinist ideology and "provocative pin-up photos" (carefully mentioned in the paragraphs following this quotation) only could do so much to prevent detumescence.

In part, the city under the ice can be seen as an extension of the American impulse to create utopian communities in remote and harsh environments. The optimistic conclusion of one of the books points to the future of this frontier experience within the context of Cold War fears: "In less than a handful of years Century has pioneered a new form of atomic power, a new method of city construction, the new uses of building materials, new forms of transportation, and *new thinking* . . . It may be possible that if nations destroy themselves with atomic warfare, Century-style

cities will give the only kind of safety."[48] Yet, as can be seen from the popular accounts, city fathers at Century were equally concerned with the demographic aspects of their community as they were with the technical challenges of subsurface urbanism.

The same can be said for the Schoharie Valley project, where the participants did not stop at designing dual services and spaces for peacetime and protected uses; they also imagined the inhabitants of their ideal, nuclear neighborhoods. The Cornell team strove to design not just a town but "a community which can continue to function as such in spite of thermonuclear attack." Citizens would pull together as neighborhood units to perform civil defense duties, thus preventing "blind panic," "pessimism," or "resentment and distrust." Egalitarianism and fellow feeling, ensured through "a high degree of psychological control," would manage the interactions of the townsfolk:

> Though pre-danger period *[sic]* would be characterized by relative normality, people would still be cognizant of bomb effects, and would undoubtedly be aware of any inequality in shelter provisions that might exist in the community. This, and conceivably resultant social antagonisms must be considered in any community shelter plan.[49]

The social homogeneity of Schoharie Valley would help secure a sense of community by short-circuiting any sense of social inequality.

It would help that the designers imagined a certain kind of community. If Camp Century was a military municipality, Schoharie Valley was a company town for EMF, or "Electronics Manufacturing Facility," closely modeled on IBM, which consulted on the Cornell project. Educated, implicitly white, high-technology workers and their families would make up the homogeneous population of the community. As one of the instructors related, students were particularly fascinated by IBM's "culture of conformity." The social homogeneity of Schoharie Valley is reconfirmed by the hypothetical attack scenario that caps the report, imaginatively describing the responses of a "typical family" to nuclear war. "The Currans" represent second-generation Irish Americans who have left behind their inner-city, ethnic enclaves as part of the great suburban migration and assimilation. Conforming to expected roles, when the siren sounds, "Jim is at his desk in the administrative section of EMF. Isabel is baking a pie for dinner, and [little] Jimmy is in his classroom." While each character takes shelter immediately in spaces provided adjacent to their work or school, the family is reunited soon enough since all shelter areas are

connected within the underground transit system. Each neighborhood shelters together, reflecting the peacetime distribution of families on the surface. Therefore, in duplication of both the urban design and the urban demographic, it was ensured that fallout shelter would be characterized by the familiar. In this the plan closely prefigured later CSPs. The Schoharie scenario goes on to demonstrate how city planning allows the community to continue functioning in an emergency. Indeed, the civil defense planning had been so effective that during his morning commute on the second day of sheltering, Jim "almost forgets that this is not a normal workday rush . . . There are even a few cheerful 'good mornings' to enhance the illusion."[50] Meanwhile, one hundred million or so undispersed Americans would have been dead or dying topside.

In addition to developing a civil defense city plan, the students and faculty at Cornell—and, they hoped, the readers of their publication—took away an ethical lesson about professional responsibility: "Circumventing all questions of the 'rightness' or 'wrongness' of nuclear war . . . physical planning for survival remains a need that must not be naively disregarded" (iii). Those charged with fabricating (in both senses of the word) the built environment were poised to provide their services to the nation. The nation's need for their expertise in architectural and urban design was justification enough for some professionals to forgo the light of day, even if it meant subsurface spaces for a postapocalyptic America. Of course, the designs and plans discussed earlier were for hypothetical and symbolic cities. Americans today do not have access to emergency underground cities, or even to public shelters of any sort. While civil defense officials could agree on saving themselves in hardened Emergency Operating Centers, and governments and businesses could act to protect their own personnel and records, building underground at an urban scale required a mass mobilization no one would muster. As Mumford concluded about them, "The staggering cost of creating a whole network of underground cities sufficient to house the entire population as yet prevents this perverse misuse of human energy."[51] Communities, it seems, would have to be encapsulated in some other way.

CONCLUSIONS

The idea of a democratic collective that required individual or institutional sacrifice had more to do with the projection of national identity than with actual material conditions. Private institutions, capitalist enterprises, and

components of the federal bureaucracy resisted every step toward the expansion of the welfare state through Great Society programming. Even the emergency capacities of civil defense, which arguably were essential to the Cold War posture assumed against communism, were curtailed by conservative reluctance to spend tax dollars on social welfare. But to different extents in all capitalist democracies, the political and economic imperative of liberal individualism must be moderated by nationalist gestures toward the social rewards of collectivism, a project that demands a symbology of community. Civil defense symbolized the strength of the national community, even under duress. The surveyed spaces of the city could be made to conform to a national civil defense project. But civil defense planners already imagined, for the sake of their hypothetical shelter scenarios, that neighborhoods represented a form of organic self-management. In this, they were influenced by the neighborhood unit concept and other urban theories. With shelter planning, existing communities would provide the models for "drainage areas" and management strategies. Sheltering for civil defense would be a natural extension of everyday life and the everyday built environment.

The managerial controls instituted by civil defense betrayed the political biases inherent to its programs. Planning decisions based on preexisting neighborhood boundaries attempted to ensure that like would shelter with like. As civil defense propaganda confirms, any necessary social mixing would be managed to ensure the preservation of existing social structures and roles. The assurance that Americans, in the midst of nuclear war, would not encounter uncomfortable social situations due to the mixing of classes or races helped to legitimate both civil defense and the new bureaucratic powers of urban planning. However, the representations of managed spaces and citizens in the imaginary of civil defense belied what most Americans believed about the social and urban devastation inherent in nuclear war. Citizens continued to believe that postapocalyptic spaces and social relationships would be, in essence, unmanageable. Was it ethical, therefore, as the Cornell team argued, to design spaces despite their seemingly false promise of security? As we will see in the following chapter, architects throughout the 1950s and 1960s would engage in a strenuous debate whether these spaces should be designed, or for that matter, whether they *could* be designed.

4. DESIGN INTELLECTUALS

Professional Architects and Civil Defense

> We're strong in our convictions that, both before and after buildings begin to fall, the one last minute factor of safety will be the spot judgment of men experienced in the ups and downs of buildings.
>
> **—Horace Peaslee, chair, AIA Committee on Civilian Protection (1942)**

> It is not enough that the designer of the sixties be a creative member of society; he must begin to function as a leader and shaper of opinion as well.
>
> **—David Allison, "Fallout Shelters at Once"**

Separated by some twenty years, the preceding epigraphs illustrate a significant shift in the way architects projected their role in civil defense. The earlier statement, dating from a time of anxiety in the wake of Pearl Harbor, figures architects as builders, as technical experts offering an emergency service. By the 1960s, architects still were expected to play expert roles in the creation of environments, but now they were to perform on a broader social and political stage. The American Institute of Architects (AIA) and its president at the time, Philip Will, envisioned members in positions of leadership, even "statesmanship," in the Cold War context. Many architects did embrace the opportunity to play the role of (civil) defense intellectual. This chapter traces the AIA's concerted and strategic efforts to position itself as lead consultant to government on civil defense. Striking new committees, producing technical reports and position papers, leading other professions, and volunteering the services of its members, the AIA staked its claim on this work of national import. While architectural approaches to threat paralleled the concerns and metaphors of the civil defense discourse, they also advanced the particular preoccupations, skills, and desires of professional architects.

To the AIA, civil defense seemed to be a fruitful method for promoting the profession on a national scale. Going back to the earliest years of the AIA, its role as the sole national arbiter of the profession always had been negotiated and partial. But following a complete structural reorganization of the institute in 1946, disparate local and state chapters would be disciplined through centralization. An expanding, professional, full-time staff at the Octagon, the AIA's headquarters in Washington, D.C., would control public relations, government liaison, and professional standards.[1] The AIA board and staff often took a somewhat paternalistic tone in relation to the dispersed chapters and diverse membership, who were not always disposed to the decisions of the distant headquarters. Certainly, by the early 1960s it seemed vital that the AIA project the appearance of a unified field of expertise that produced rational and realistic plans, in addition to idealistic visions. As the federal government increasingly looked to architects for advice and design work, the AIA expected architects to conform to a message that was as consistent in its political expression as it was in its deployment of expert knowledge.

Often, the AIA hoped to bring architectural expertise to the attention of institutional patrons and promoters, including the government, by promoting architects' roles in the *science* of producing human environments for modern subjects. Among other things, the institute did its best to have architects participate in the copious research that was conducted in the 1950s and 1960s to determine the response of cities and structures to nuclear attack. Architects would become men of research and science, and of business, rather than the aesthetes they had been known as previously. This new image would help them compete with other professions jostling for recognition from potential design clients, especially the federal government.[2] As a result of its hard work building bridges with civil defense officials, by the time of the fallout shelter survey the AIA believed that architects were poised to take a leading role in protecting the nation. If successful, the AIA would position civil defense work and, more broadly, service to the nation-state, as a natural extension of architects' professional mandate.

Architecture for civil defense was contested hotly, though. Claims of the civil defense establishment about the inevitability of war and the possibility of survival were debated on many fronts, including that of the design professions. A key strategy for activists was to denaturalize atomic culture by emphasizing the magnitude of potential destruction, and the possibility of diplomacy and arms control. Meanwhile, conscientious objectors

refused to take shelter or to evacuate buildings and cities during civil defense drills, making spatial claims to counter the vacuum of public space and public discourse.[3] The civil defense debates within architecture paralleled those in the general public but also diverged from them in addressing specifically the role of the expert, the duties of the professional, and the broader social purpose of architecture.

Throughout the early Cold War, architects squared off on both sides of the civil defense debate, with both sides making technical and ethical arguments. Beginning in the early 1950s, critics of architecture for civil defense pointed to nebulous plans and speculative structural calculations all based on minimal information. They argued for peace rather than patriotism—or more precisely, for peace as an alternative form of patriotism. Among other things, critics believed that architects ought to solve national and international problems of mass housing rather than mass shelter or dispersal. In this, they harked back to the idealism of the earlier modernists, who believed in architecture as social reform. By 1961, a group of architects arose to protest the AIA's new, close involvement in civil defense. Focusing on the institute's promotion of fallout shelter surveys and competitions, the group attacked AIA's unilateral decision on behalf of the members to assist the government in "planning for destruction." No longer questioning the technical possibilities of architecture for civil defense—indeed, dismissing them entirely—this protest group stated bluntly that fallout shelters were "anti-architecture." The AIA was forced to prove that this was indeed "architecture," even "good design," and the ongoing competitions, charrettes, and award programs described in chapters 5 and 6 were to provide the evidence. Those in favor of architecture for civil defense were most active in government programs, most prominent in the AIA, and therefore most influenced the direction of the professional association, if not necessarily the practices of all professionals. Notably, in the hope of bolstering the profession's status with patrons and the public, both sides of the debate represented architects as public servants with responsibilities far broader than just the "ups and downs of buildings."

PERFORMING ARCHITECTURAL EXPERTISE: THE AIA'S PART

The debate about architecture for civil defense that erupted within the ranks of the AIA during the early Cold War was in many ways a crisis moment in the professional discourse that points to broader historical

struggles among U.S. architects over the nature and role of the profession. Historian Margaret Crawford has argued that since the nineteenth century, architecture has been split by a "persistent barrier between the needs of professional identity and the demands of social responsibility." Although it consistently claims public service as its aim, the architecture profession's ability to provide this service is circumscribed by its limited role in the development of the built environment and its almost total reliance on patronage. That is, despite the social goals they may have, architects ultimately are given a specific job to do for a paying client. Nevertheless, as Crawford further states, the representation of architects' social responsibility was at the same time necessary to professional identity.[4] The AIA consistently strove to represent the profession in this manner. The participation of architects in civil defense usually was framed such that the "full use of their professional talents and abilities may accrue to the greatest benefit of the public," to quote the opening words of a 1951 AIA publication, *Civil Defense: The Architect's Part.* In addition, the AIA's 1954 *Standards of Professional Practice* averred the professional's "grave responsibility to the public," a rather ominous statement in light of the atomic age. But resistance to architectural participation in civil defense work indicates that many architects saw "design for survival" as a betrayal of their professional mandate. How each architect interpreted his or her "grave responsibility," or even what was meant by "the public," formed the ethical parameters of the debate over both civil defense and good design.[5] In spite of the debate regarding civil defense, the AIA board and staff forged ahead, putting the institute and its members on alert, ready to serve in the Cold War.

When the Federal Civil Defense Administration (FCDA) was first established in 1950, the AIA already had a history of concerning itself with national defense. Certainly, architects had participated in World War II mobilization: as designers for all branches of the armed services, as builders of wartime housing and new towns, and as private contractors providing plans for munitions plants and military installations.[6] However, during World War II the limited role of architects in civil defense reflected the incomplete development of any national program of home front protection. In fact, government and public interest in civil defense disappeared even before the end of the war in 1945. There had been scattered civil defense activities, including shelter surveys in a few cities, but most architects who contributed to the home front effort did so by designing large-scale camouflage to protect industry from aerial attack. Significantly,

though, the AIA did mobilize an ad hoc committee on civil defense, and it lobbied successfully for the formation of a technical advisory board (also including engineers) that consulted with the federal Office of Civilian Defense on architecture and infrastructure. This idea of a multidisciplinary, technical advisory board for civil defense, led by architects, would be renewed by the AIA in the early 1960s.

Based on its World War II experience, the AIA would continue to pursue a leadership role among professional associations, especially with the advent of atomic-era civil defense. As early as 1947, the AIA's executive director, Edward Kemper, proposed that the institute take some interest in the architectural "implications" of the atomic age: "International developments . . . furnish justification for giving some thought to what might happen to our cities if there is another war; and . . . what atomic warfare has to offer—including not only the atom bomb, but the very unpleasant gasses, plagues and related things said to be a part of the same technique."[7] Kemper's soon-to-be successor, Ned Purves, agreed, writing to AIA president Douglas Orr that the institute should move quickly to "beat other people to the punch."[8] With this impetus, the AIA formed the Committee on Atomic Age Architecture, which hoped to offer its services to government in relation to both protective construction and design for atomic energy. At the time, the only government agency responsible for the new technology was the Atomic Energy Commission (AEC), but the AEC had nothing to do with—and no interest in—civil defense. Moreover, as AIA committee members complained in 1951, "With the Gods of the AEC, the mills grind extremely slowly and to extract from them any useful information is a tremendous task. They, like the armed services, hide continuously under the broad cloak of Security."[9] So, in its first few years this AIA committee limited itself to studying peacetime uses of the atom based on research in readily available source materials at the public library.

With the outbreak of hostilities in Korea, the context for civil defense planning changed quickly. The existing AIA Committee on Atomic Age Architecture split: a new Committee on Nuclear Facilities would continue its research into the design of reactors, laboratories, and other aspects of the technology; the Committee on National Defense would attend to matters related to remobilization, especially civil defense. In its mandate, the Committee on National Defense also maintained "as a prime objective the preservation of the AIA and of the high status of the profession."[10] For instance, a significant portion of the committee's initial work was lobbying to get architecture students deferred from military service on a par with

engineering and science students (in the end, the armed services decided on no group deferments at all). Meanwhile, AIA staff members were serving on the Construction Industry Task Group of the National Security Resources Board, one of the agencies soon to be rolled into the FCDA. Therefore, the AIA found itself in a good position to assume an advisory role with the new Federal Civil Defense Administration: institutional knowledge and a committee structure were already in place at the AIA when the FCDA came looking for expertise on the built environment. As Ned Purves, the institute's new executive director, wrote in 1950, the AIA "is well ahead of the game and is so recognized by Federal agencies."[11]

Although Purves himself was skeptical about the utility of civil defense (and later stated his preference to die at ground zero), he could see the potential in claiming it as the duty and responsibility of architects.[12] In the competition to provide environmental design services, architects had an opportunity to prove they were scientists and leaders as much as, or rather than, artists. The AIA outlined its position in *Civil Defense: The Architect's Part,* a booklet mailed to all members in 1951: "Designation of an architect to be in complete charge of building services within each division and subdivision of the national organization down to the local level is necessary because of his experience and training in co-coordinating engineering and technical planning services."[13] The realm of civil defense—with its wide range of spatial, structural, programmatic, and, indeed, representational problems—was a field where architects felt they could exert the authority they believed was their due.

The Architect's Part was prepared by Harry Prince, chair of the Civil Defense Sub-Committee of the AIA Committee on National Defense. Prince was unusual on these committees in lacking a military background, though he made up for it with other experience: according to the foreword by former AIA president Douglas Orr, Prince had seen "England blitzed during the last war, when he was special adviser to the late Fiorello LaGuardia, then Director of the [U.S.] Office of Civilian Defense."[14] More typically, in choosing members for the AIA Committee on National Defense, Ned Purves was explicit that architects with military experience were preferred. Purves himself was a war hero—multiply decorated with the French and American armies in 1917–18, he was then U.S. Army Air Force chief of counterintelligence in World War II's Pacific theater.[15] Committee members were tapped for their experience in wartime production, their connections to the AEC and FCDA, or their contacts with the armed services. While the participation of architects on the fronts of the

Cold War had little to do with what one might call soldier's work, one of the National Defense Committee's first actions was to extract data from the AIA's survey of registered architects to determine individual histories of military service by branch, rank, reserve status, and applicable design work.[16] In this, the AIA's defense experts shared the traits of civil defense personnel nationally—the FCDA was a quasi-military organization that allowed old soldiers to relive their wartime sense of duty by protecting the home front. Everyday life in the United States was militarized during the Cold War partially because of the prevalence of veterans in all fields of endeavor who were socialized to view martial organization as the best means of responding to crises. World War II had taught architects and other Americans that militarization greased the wheels of the economy and created lucrative work for those who could accommodate themselves to its demands. This lesson learned, it would be applied to the ongoing mobilization required by the Cold War. As the AIA continually stated, architects had served gallantly in the two world wars, and they would serve again in the Cold War.[17]

DEVELOPING ARCHITECTURAL EXPERTISE: CIVIL DEFENSE RESEARCH

Since civil defense was one area where architects were able to assert their professional status, the FCDA's indecision and incompetence during the 1950s were particularly frustrating to the AIA. Would a program of home-front protection be based on shelter or dispersal? Both or neither? Architects were eager to contribute either way. The AIA National Defense Committee complained as early as 1952 that a program of "prototype shelter construction" it proposed had been dropped by the FCDA "in favor of less essential items such as public opinion surveys of attitudes toward civil defense."[18] By 1955, the AIA expressed its dissatisfaction in an official policy statement on the state of civil defense: "The Institute believes that there are inadequate funds and personnel within the [FCDA] and other Government agencies responsible for Civil Defense, for them to carry out a program that fulfills their obligations in the manner in which the public believes they are being carried out."[19] In the minds of AIA committee members, FCDA-sponsored disaster studies in the social sciences were outweighing those in the structural sciences because the former were more intimately tied to the public relations aspect of civil defense.

Despite these criticisms of the FCDA, and the dissolving of the Committee on National Defense after the Korean War, the AIA continued

close involvement in civil defense planning through other committees and staff channels. Meanwhile, the institute strove to raise its research profile in a number of ways. As architectural historian Avigail Sachs has shown, the AIA followed the lead of a few private firms like Caudill Rowlett Scott, which pioneered on the frontiers of architectural research; along with some schools of architecture, these firms hoped to capitalize on the "research ideology" associated with the postwar military-industrial complex.[20] In 1954, the new umbrella Committee on Research subsumed the prior committees related to the atomic age, along with other areas of AIA interest such as building components and materials. At that time, the AIA board disseminated a policy statement titled "Research, Architecture and Man's Environment," establishing the institute's position regarding the scientific progress of "American culture" and the "Vital Role of the Design Professions" in ensuring that "man may not only survive but thrive." Drafted by Walter Taylor, AIA staff member in charge of research and educational programs, the statement envisioned architects as collaborators in a scientific community: "To safeguard civilization and to cope with the rapid evolution in human activities there is urgently needed today a new fundamental and positive approach to the control and creation of environment . . . founded on the principles of the biological, behavioral and physical sciences, planned by the cooperation of all competent groups properly concerned."[21] Or, more succinctly, as the AIA's new Committee on Science and Architecture stated in 1958, "The Scientific Age is a fact—the Architect can be a part of its development or he can be bypassed."[22] The AIA believed that, as a science, rather than as an art, architecture could better preserve its status in the atomic age. Compared to the nascent urban planning profession, however, architects already were falling behind. The American Institute of Planners had released its own statement on research five years earlier, and it had detailed a specific program of proposed research projects on the state of U.S. cities.[23]

By the time the AIA began to encourage architectural research in the mid-1950s, only a few architects had the scientific credentials to qualify them as defense intellectuals. Some AIA committee members boasted résumés that listed technically complicated structures designed for branches of the military. The chair of the AIA Committee on Nuclear Facilities, William Maxwell Rice, had been resident architect at the University of California radiation laboratory since 1946. Similarly, Robert L. Corsbie was chief architect at the AEC and that agency's director of civil effects tests at the Nevada Proving Ground. For the Nevada tests, civil defense

architects designed and researched some of the prototype shelters, infrastructure, and building systems subjected to atomic blasts. This was destructive testing at perhaps the grandest scale it ever achieved. Beginning in the early 1950s, AIA committees were brought in to approve, "for typicality," the test houses at Yucca Flat designed for the AEC and FCDA research programs. Ironically, though, it was not the Committee on National Defense but AIA's Committee on Nuclear Facilities that participated in the Nevada tests, because only select members of the latter committee had the security clearance to be on evaluation teams.

The "civil effects tests," Operations Cue and Doorstep (discussed in chapter 1), produced technical design data in addition to moral lessons. In Cue, the "Doomsday Drive" houses constructed at 4,700 feet—and 10,500 feet—from ground zero were laboratories for architectural forensics. Researchers found that at close range, the precast concrete and concrete block houses fared well; at long range, even the wood frame houses survived the blast in good condition; only the brick houses were severely damaged at both distances, though a basement bomb shelter stood up under the rubble (Figures 4.1a–d and 4.2).[24] Participants at the test shots reported back to architects and engineers through the professional journals, sharing the scientific data that could be applied by designers of protective structures. Countless articles on civil defense design problems were published in the early 1950s in *Architectural Forum, Architectural Record, AIA Journal,* and in the *AIA Bulletin,* which disseminated technical reports to the membership. The ongoing theme in these journals was that "buildings can be designed to resist A-bombs."[25] In these venues, architectural graphics, including elevations, structural sections, and details, specified the effects of blast, often in a simplified language comprehensible to architects. For example, a cartoon from a 1952 shelter design manual, reprinted in *Architectural Record,* depicted the resistant qualities of modern frame versus traditional wall-bearing construction (Figure 4.3). When the big wind comes, the continuous connections of the former are superior to the stacked masonry of the latter.

Beyond just illustrating the effects of explosions, architectural data from the tests and other research, such as the U.S. Strategic Bombing Survey, attempted to quantify Armageddon for the supposedly rational, scientific designers of American buildings. Presented as geometric diagrams of destruction, this information was meant by its disseminators to reveal how one might begin to design for such parameters. One such graphic (Figure 4.4) by engineer Boyd G. Anderson and FCDA architect

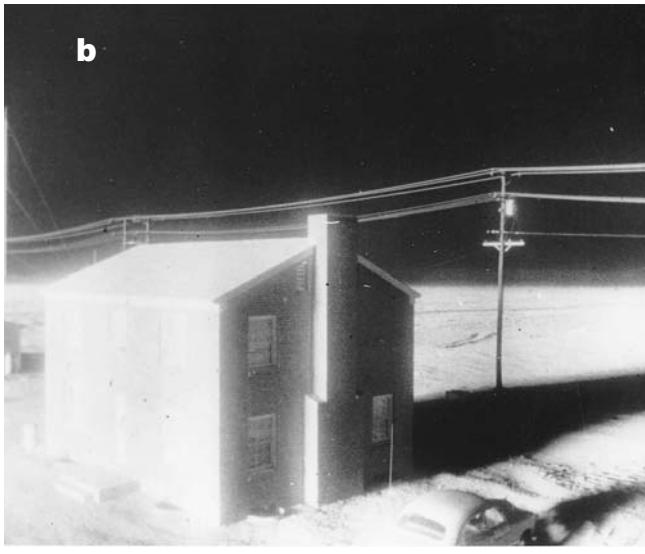


FIGURE 4.1. Sequence from Operation Cue demonstrating the destructive powers of atomic weapons when wielded against typical American center-hall plan, Colonial Revival houses. Photo nos. 3-O-17, 3, 4, 5; RG 397-MA; National Archives, College Park, Maryland.

Ellery Husted cleverly combines the now-familiar, concentric circles of destruction with a graph charting the "increase in cost for blast protection in multi-story structures as they are closer to ground zero." Deploying a fiscal argument to support the commitment of 1950s civil defense to sub-urbanization, the caption avers that the "rings show that more buildings in outer area can be protected for a given increase" in cost.[26]

FIGURE 4.2. Basement shelter *(left)* and metal file storage in test house, Operation Cue. Photo no. 3-0-20; RG 397-MA; National Archives, College Park, Maryland.

The Nevada tests typically resulted in more ambivalent conclusions. According to the designers of a pair of concrete test houses sponsored by the Portland Cement Association, "The architect and engineer estimate that if a hydrogen bomb 1000 times more powerful than the Hiroshima bomb were exploded over the center of a large city, the additional investment of less than 10 per cent to build a 'Survival House' would probably save 70 to 80 per cent of the houses located on the periphery of the city."[27] Architectural research in Nevada affirmed, or at least estimated, the *possibility* of designing blast-resistant buildings—*if* the building were far enough from the blast, and enough money were spent. But as AEC architect Robert Corsbie wryly pointed out, "It is not enough that the shelter survive, the occupants must also." In the first series of Nevada test shots in 1951, a concrete shelter designed by Corsbie and others was found effective in holding up to blast effects, but it gave no protection from the fatal radiation levels of atomic events. As a result, Corsbie explained, subsequent tests sought *structural* data but also information about *architecture,* by which he meant human shelter:

> The great thing this experiment did was to set us to work on what we have called the criteria of a biologically acceptable environment in a shelter . . .

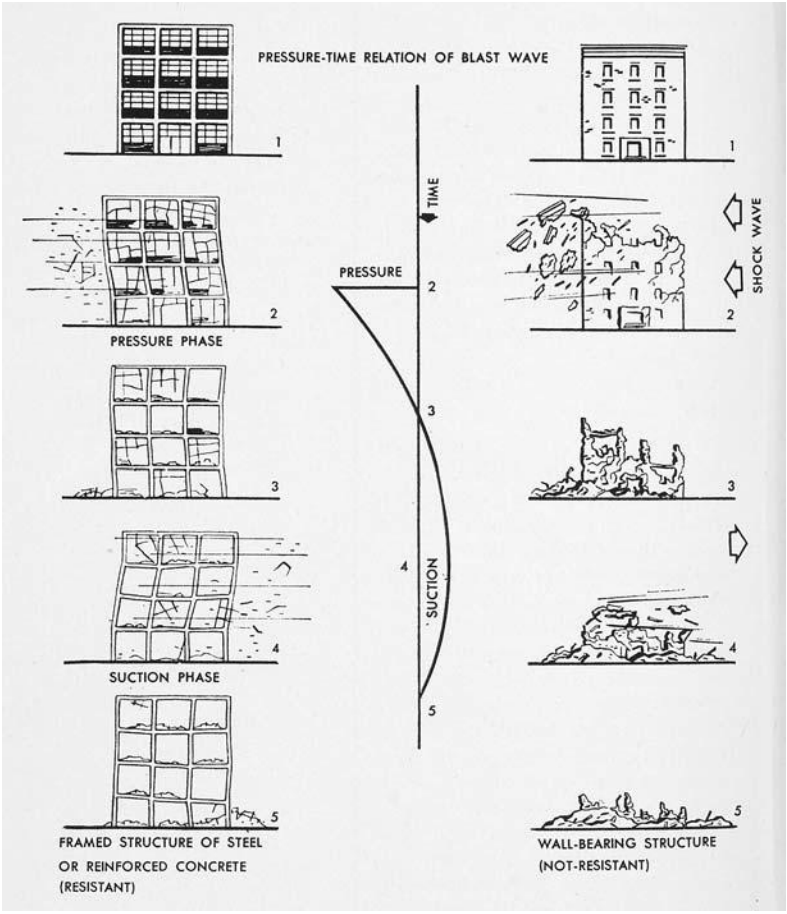


FIGURE 4.3. Resistance of structures to atomic blasts, modern frame compared to traditional wall-bearing construction. From *Architectural Record,* September 1952. Collection of Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal.

> This has involved us in the study of . . . the effects of overpressure . . . the production and effects of missiles—rocks, glass, and other materials accelerated by the blast . . . the effects of the blast winds . . . of temperature rise and production of dust in shelters—all these things to know enough to say with confidence that this shelter will protect a man and his family.[28]

Mannequins and their families—along with pigs, dogs, and other animals subjected to gruesome experiments—were the test cases for "biologically acceptable environments" in the radioactive desert of Nevada. As it always had, architecture could continue to provide humans with shelter from the elements—but now with the support of experimental science.

Protective construction was only one of a number of civil defense strategies to which architects could contribute their expertise. For example,

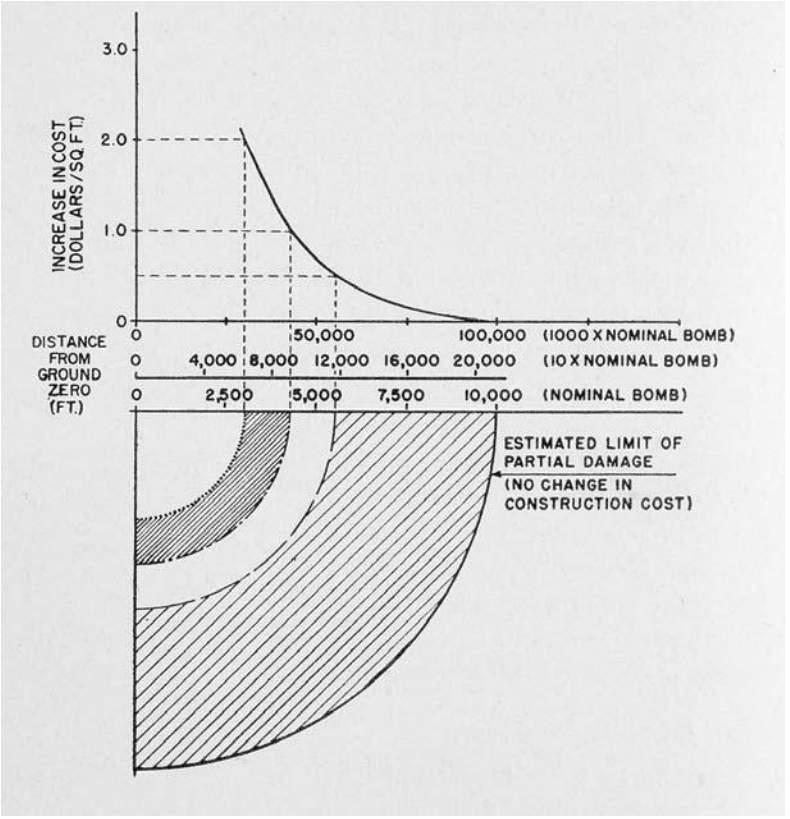


FIGURE 4.4. Cost of bombproof construction for school buildings as distance from ground zero increases. From *Architectural Record,* June 1955. Collection of Centre Canadien d'Architecture/ Canadian Centre for Architecture, Montreal.

the AIA sponsored some civil defense research of its own, using its Langley Scholarship in 1952–53 to support a graduate student in preparing "A Pilot Study of Planned Industrial Dispersion in the Baltimore Area." Applying the concept of decentralization in a case study format, the Langley study was framed in reference to civil defense and to contemporary urban development theory: "Industrial dispersion is essential to our very existence & it is rapidly assuming its rightful position of importance in the over-all plan of American living."[29] The Langley study had been inspired by Project East River (PER), the largest government-sponsored research program on civil defense in the 1950s. Conducted by Associated Universities, a consortium of Ivy League schools, PER assembled into a massive report the wisdom of more than one hundred civil defense intellectuals from all fields. For its part, the AIA Committee on National Defense reviewed a section of the PER report titled "Federal Leadership to Reduce Urban Vulnerability," finding that it largely corresponded to the AIA's

own strong stance in favor of industrial and residential dispersal.[30] As the Langley study concluded about the expanding, low-density city of the postwar period, "More complete and proper use must be made of our greatest form of passive defense—*space*."[31]

By the middle of the 1950s, however, the defensive dispersal of the PER report and the blast protection that concerned researchers in Nevada both lost credence due to the exponential increase in megatonnage and duration of fallout associated with the H-bomb. As the FCDA floundered in its search for an appropriate response to the new facts of Cold War weaponry, architecture for civil defense suffered several years of anonymity, relatively subsumed under the AIA Committee on Research. But civil defense concerns resurfaced in 1958 with the new AIA Committee on Disaster Control, whose task was to "protect human life and minimize damage to buildings resulting from disasters, including, but not limited to, fire, flood, earthquake, and enemy attack."[32] Struck by the hubris of their title, committee members soon reported to the board that they "would like to have a committee name that does not imply that we presume to control disasters."[33] Thus, in 1960 the AIA consolidated it with the separate Committees on Human Safety and on Building Codes into one Committee on Safety in Buildings. Three years later, it would become the Committee on Building Codes and Disaster Studies. At any rate, in these later guises, the committee was responsible for building safety in all situations, from everyday life to postnuclear holocaust. Representing a broader approach to the architectural welfare of citizens, this move by the board anticipated the new decade and its rhetoric of social welfare for all Americans.

AIA INVOLVEMENT IN CIVIL DEFENSE

In September 1961, the newly minted OCD committed to using architects for National Fallout Shelter Survey work—a major victory for the AIA lobby. At the same time, the OCD approached the institute, seeking its advice on selling the national shelter program to the building professions and to the public. A real sense of excitement is palpable in the series of internal memos that recorded the response when Paul Visher, assistant secretary of defense for civil defense, telephoned the AIA offices to request a meeting at the Pentagon. As one staff member eagerly stated, "We are in position to do the job—the AIA has the horses."[34] President Will selected William Pereira (of the prominent Los Angeles firm Pereira & Luckman,

a defense contractor) and Herbert Swinburne (former chair of the AIA Committee on Research) to accompany him to the first meeting with Visher, other OCD officials, the renowned nuclear physicist Edward Teller, and representatives from the American Society of Civil Engineers (ASCE). The meeting was a "think session" devoted to a proposed special issue of *Life* magazine, which, at forty million copies, would have been "according to Mr. Visher . . . the largest single publishing venture in the history of the nation."[35] This special issue never was published. By the time it was ready, *Life* magazine had tempered its editorial enthusiasm for the OCD program. Instead, a sixteen-page civil defense supplement ultimately was published "as a service to industry" in McGraw-Hill trade journals, including *Architectural Record* (Figure 4.5). Directed at corporate leaders and property managers, this was a somewhat less populist publishing venture than Visher originally intended, but it was nonetheless widely distributed. While providing specific information on "physical protection," this insert's larger goal was to give recommendations regarding comprehensive "survival" and "recovery" plans for the place of business. Secretary of Defense Robert McNamara provided an encouraging afterword. *Architectural Record* complemented the insert with two highly detailed articles on the latest techniques in design for survival.[36]

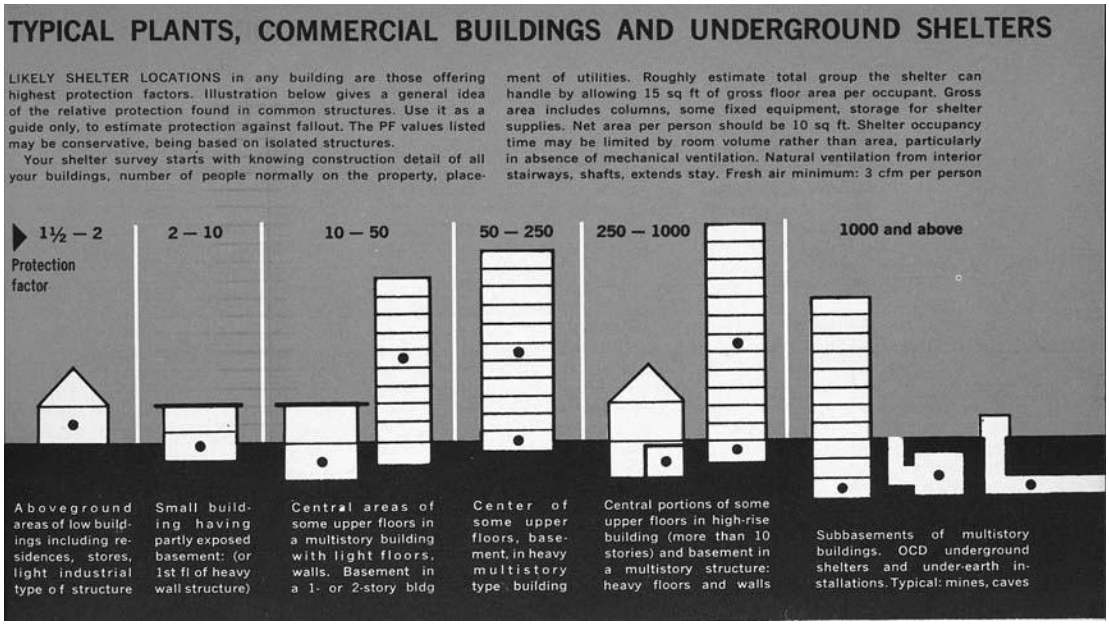

TYPICAL PLANTS, COMMERCIAL BUILDINGS AND UNDERGROUND SHELTERS
LIKELY SHELTER LOCATIONS in any building are those offering highest protection factors. Illustration below gives a general idea of the relative protection found in common structures. Use it as a guide only, to estimate protection against fallout. The PF values listed may be conservative, being based on isolated structures.
Your shelter survey starts with knowing construction detail of all your buildings, number of people normally on the property, placement of utilities. Roughly estimate total group the shelter can handle by allowing 15 sq ft of gross floor area per occupant. Gross area includes columns, some fixed equipment, storage for shelter supplies. Net area per person should be 10 sq ft. Shelter occupancy time may be limited by room volume rather than area, particularly in absence of mechanical ventilation. Natural ventilation from interior stairways, shafts, extends stay. Fresh air minimum: 3 cfm per person
Protection factor
1½ — 2
2 — 10
10 — 50
50 — 250
250 — 1000
1000 and above
Aboveground areas of low buildings including residences, stores, light industrial type of structure
Small building having partly exposed basement: (or 1st fl of heavy wall structure)
Central areas of some upper floors in a multistory building with light floors, walls. Basement in a 1- or 2-story bldg
Center of some upper floors, basement, in heavy multistory type building
Central portions of some upper floors in high-rise building (more than 10 stories) and basement in a multistory structure: heavy floors and walls
Subbasements of multistory buildings. OCD underground shelters and under-earth installations. Typical: mines, caves

FIGURE 4.5. Shelter in typical business establishments, from the McGraw-Hill supplement to *Architectural Record,* January 1962. Collection of Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal.

What also grew out of that first meeting with Visher was the idea of a Construction Industry Advisory Committee to the OCD. Will took the lead in forming this committee from representatives of the main professional associations in the building industry: the AIA and ASCE, along with the Associated General Contractors, National Society of Professional Engineers, the Engineers Joint Council, and the American Institute of Planners. According to AIA staff who met with Visher to discuss the creation of this committee, the assistant secretary of defense was "impressed that Phil [Will] could speak on behalf of all these societies."[37] The committee was careful to emphasize the limits of its advisory role in the service of the public interest: it would not influence civil defense policy related to shelter requirements, funding, or construction. Above all, the decorous professional organizations that formed the committee eschewed mercenary motivations for their participation. In this way, the Construction Industry Advisory Committee endeavored to distinguish itself from "unscrupulous commercial groups."[38] For instance, the National Association of Home Builders (NAHB) had been lobbying the OCD and federal legislators to give financial support for fallout shelter construction in single-family homes rather than in public facilities. An AIA staff member attended and described a civil defense meeting called at NAHB headquarters "to hard-sell the government visitors on the need of individual shelters . . . Since there was no interest in the other 90% of the population, it was obvious that the whole affair was not prompted by interest in the public welfare but in the pocketbooks of their volume builder-members."[39] In contrast, professional ethics called for placing public welfare at the heart of the discussion—as long as there was the likelihood of some public monies in the future.

The Construction Industry Advisory Committee was formalized by an exchange of letters between Will and McNamara in December 1961. Committee minutes during the following year record issues of mutual concern to building professionals and the OCD: communication to, and training of, practitioners; payment schedules for civil defense and "emergency" design work; logistics of a proposed shelter construction incentive program; difficulties of dealing with diverse building code organizations to propagate a model code for fallout shelters; and the need for data from the national shelter survey to be utilized for long-range urban planning.[40] The AIA already had commenced informing its members through its *Journal* and *Memo* (which replaced the *Bulletin*) about a revived civil defense program based on community shelters. To reintroduce the subject

to members at large, the November *AIA Journal* included two articles on fallout shelters: an abridged version of Lyndon Welch's report to the Committee on Building Codes and Disaster Studies, quoted in chapter 2; and an analysis of four shielding studies for a new school building, each based on different assumptions about target, weapon size, distance from ground zero, and desired level of protection.[41]

Just before these articles were published, President Will sent a letter to the entire membership, drawing their attention to the great potential for public relations and good citizenship available to architects participating in the fallout shelter program. Will presented a brief description of past AIA involvement in civil defense and outlined the OCD training being offered to architects and engineers in shelter analysis and design. He concluded with his belief that "all practicing architects should prepare themselves to render this vital service to the nation and to their clients." Will expected that AIA members would "participate vigorously." Architectural expertise, he wrote, could very well "preserve us from decimation."[42] Embracing standard civil defense rhetoric, Will deployed the first-person plural pronoun "us" with the intention that architects would recognize themselves in his patriotic call to muster. But the president's letter produced some unwelcome protests from the AIA rank and file, reflecting a debate dating back to the beginnings of architecture for civil defense during the Korean War.

THE RESPONSIBILITIES OF ARCHITECTS

Although architects' primary purpose always has been to provide shelter, in the 1950s and 1960s they were urged to recognize that along with the atomic age came new meanings and designs for shelter. AIA staffer Fritz Gutheim, speaking at a meeting of the Committee on National Defense in 1951, noted that civil defense might offer "new opportunities for practice, for serving the public, for assuming community leadership." But he correctly predicted it would be a problem to convince the membership that "this is architecture" at all.[43] Despite the purported benefits to the profession, many architects would need to be sold and cajoled for them to accept civil defense as their purview. Beyond the basic question of the technical role that architects could play in design for survival, many architects cited the geopolitical implications of civil defense—that it was preparation for war—to argue that participation in it would mean the neglect of their social responsibilities. That is, their ethical duty to shelter people

might be overshadowed by their practices of sheltering the nation from Cold War dangers.

As a result of these competing interests, a debate erupted within the AIA and the architecture journals over civil defense. The controversy peaked in 1951 and in 1961–62, at the moments when architects most strenuously were enjoined to provide their services to the cause of national security. In the decades between and after those dates, the controversy was sustained by authors arguing more generally about the ideological role of the architect in the Cold War, both at home and abroad. During the first burst of activity prompted by the Korean War in 1951, *Progressive Architecture (P/A)* published a twenty-page symposium titled "The PROS and CONS of Architecture for Civil Defense." In it, architects, engineers, and other experts debated a number of pressing questions:

- Are individual shelters worthwhile?
- Can group shelters save lives?
- Can existing buildings and their occupants be protected?
- Should new buildings be designed to resist atomic blast?
- Should urban redevelopment proceed (despite a wartime economy)?
- Do new towns provide safety?
- Does safety lie in urban dispersal?

Regardless of their ethical position, wrote *P/A* editor Thomas Creighton, the "architect and the planner cannot run away from the civil defense problem. Their advice is going to be asked."[44]

In fact, *P/A* identified two key roles for architects in civil defense, providing shelter or guiding dispersal—depending on the official line of the federal agency at any one time, either or both roles might be appropriate. As the magazine's editors summed up, those in the pro camps saw civil defense as an opportunity for the architect to "relate himself and his profession to changing times" through the research and design of blast-resistant structures, and by working toward the "strategic decentralization" of U.S. cities; along the way, architects might pick up some lucrative government or corporate contracts. The cons believed that the architect should "act as leader, rather than as technician bending his will to that of the client of the moment." Long-term peace would be served better by the architect concerning himself with international outreach to less advanced nations and with the "improvement of the physical and intellectual level of our own country" (63).

Above all, the pros held strong in their belief that the civil defense problem was ultimately rationalizable, despite a raft of uncontrollable variables. For example, it seemed "almost axiomatic" to Verne O. McClurg, a Chicago civil defense planner participating in the *P/A* debate, that the federal government would "make the most careful studies" of things like the number and type of targets, the number of bombs, and so on, and then provide "conclusions as to nature and likelihood of attack for each community" (68). Pending such conclusive statements from the authorities, Fred Severud and Anthony Merrill still could propose a quantifiable "survival degree scale" anticipating the conclusions in their forthcoming book, *The Bomb, Survival, and You*. They detailed specific structures and forms based on "a review of damage done during actual blasts, and some key computations." While their "suggested sawtooth treatment" assumed that the precise location of ground zero could be predicted, the windowless concrete silo they proposed did not gamble on the infallibility of strategists and bombardiers. Wherever the bomb landed, "the one-sided blow is changed to a hug" (71) as blast effects would wrap around the structure (Figure 4.6).

Harry Prince, chair of the AIA Civil Defense Sub-Committee, argued against Severud and Merrill in *P/A*. To an architect, proposing that design creativity be subjugated to the dictates of a few safe materials and forms represented a "hysterical reaction" and not a rational plan. As Prince wrote, civil defense "will be a reasonable concept only when defensive measures are such that we do not have to live in holes, bastions, and silos . . . Shall we put the glass industry, for instance, out of business?" (71). In her statement against new towns for civil defense, city planner Jaqueline Tyrwhitt pointed to quality-of-life issues. Countering the overwhelming professional discourse of urban decentralization, she argued for "a vital city center." Londoners, she wrote, had done just fine during the last war, despite living in a target area; indeed, rather than dispersing, urbanites under attack had shown "the enormous powers of self-reliance and resilience possessed by the human spirit" (77). The architectural and urbanistic arguments of Prince and Tyrwhitt reflected widespread public sentiment that the garrisoned life projected in civil defense scenarios—in bunkers or suburbs, before or after an atomic attack—would not be worth living.

For their part, Creighton and the editors were dismissive of civil defense propositions. To their final question, "Is there any defense from the bomb?" the magazine's editors answered "no." They concluded with a plea for peace and the conviction that the only true defense against the bomb is "to make damn sure that no bombs will be dropped" (80). Building

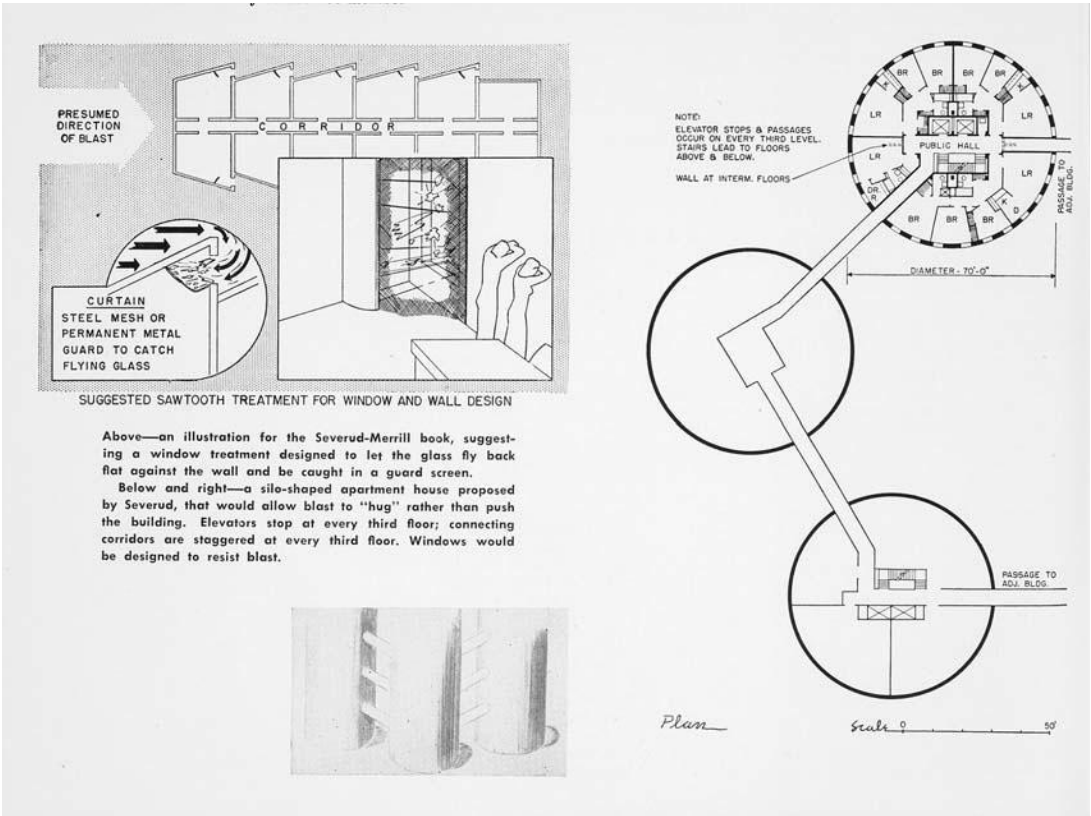

PRESUMED DIRECTION OF BLAST
CORRIDOR
CURTAIN
STEEL MESH OR PERMANENT METAL GUARD TO CATCH FLYING GLASS
SUGGESTED SAWTOOTH TREATMENT FOR WINDOW AND WALL DESIGN
Above—an illustration for the Severud-Merrill book, suggesting a window treatment designed to let the glass fly back flat against the wall and be caught in a guard screen.
Below and right—a silo-shaped apartment house proposed by Severud, that would allow blast to "hug" rather than push the building. Elevators stop at every third floor; connecting corridors are staggered at every third floor. Windows would be designed to resist blast.
NOTE:
ELEVATOR STOPS & PASSAGES OCCUR ON EVERY THIRD LEVEL. STAIRS LEAD TO FLOORS ABOVE & BELOW.
WALL AT INTERM. FLOORS
PUBLIC HALL
BR
LR
PASSAGE TO ADJ. BLDG.
DIAMETER - 70'-0"
Plan
Scale 0 50'

FIGURE 4.6. Design ideas for bombproof structures, as published in *Progressive Architecture,* September 1951. Collection of Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal.

on these conclusions, several letters to the editor in the next few months argued specifically that, as preparation for war, civil defense pessimistically presumed the inevitability of war. One animated architect from New York City turned the rationalistic language of architecture for civil defense back on itself: "We brag about being scientific planners, but when it comes to applying planning techniques to the most important issues of our lives we can't see the forest for the trees." Architects, this correspondent exclaimed, should not accept foreign policy as a foregone conclusion; rather they should "influence" it as "citizens who devote their lives to the application of reason to building activity."[45] In making these statements, *P/A* and its readers drew on other civil defense critics to denaturalize nuclear war by dismissing survivability, contradicting inevitability, and suggesting that prevention means averting the bomb's use, rather than its effects. Reflecting the stance of its editors, *P/A* would publish nothing more on civil defense for the subsequent decade.

Beyond the specific questions of civil defense, a broader debate over architecture's role in the Cold War continued among design theorists and professionals. As discussed earlier, Lewis Mumford held strong opinions on "the morals of extermination" epitomized by planning buildings and communities for nuclear war. Calling for rationality to counter the paradoxical irrationality of a technological society, he believed that technologies of mass destruction were not beyond the control of civilized negotiation. Meanwhile, John Ely Burchard, professor and dean at MIT, worried that if new technologies and their benefits were not shared with the world, then the West "must sooner or later be prepared for Operation Phoenix."[46] Putting professional responsibility in a geopolitical context, he believed architects had a role in spreading the benefits of modernity and modernism to less developed nations. In Burchard's version of economic liberalism the continued expansion of technology to the global have-nots ultimately would solve conflicts over the inequities of progress. On the home front, Burchard painted architects as concerned citizens; in their professional capacities to discuss shelter, urban planning, and other civil defense issues, they held a position of leadership among the general public.

For some architects, their definition of "the public" was restricted to the select clients who could pay for design work and appreciate art. Certainly, distinguished architect Ralph Walker, AIA president in 1949–51 and "architect of the century" as voted by his AIA colleagues in 1957, had little interest in anything that could be broadly defined as the "general public." His prose makes it clear what he thinks about his social responsibilities:

> In our age, increasingly devoted to the mass man, i.e., to mass production, to so-called dictatorships of the proletariat . . . the architect, long self-considered as an individual, finds himself in the . . . arms of confusion. He must work for the betterment of mankind—building houses for these masses, building them as cells, as deadly and nearly alike as possible—and, as cheaply as the unintelligent mass itself will permit; because these masses now seek and often get more return for less work.

He saw the excesses of collectivism as a threat to the professional identity of architects as independent providers of unique (especially aesthetic) services to a private clientele. Walker concluded that the profession needed "true individualism" to provide leadership and combat a world of anonymity with "the creative powers so vitally necessary to save it from wanton self-destruction."[47] Ayn Rand had shown in her popular 1943

novel *The Fountainhead* that the architect possessed a special capacity to symbolize liberal individualism. One such figure who inspired Rand's portrait of Howard Roark was Frank Lloyd Wright, who came out on the side of individualism in books like *Genius and the Mobocracy.* According to architectural historian Mitchell Schwarzer, Wright advocated the containment of both communism and International Style architecture; for Wright, both the ideology and the style meant standardization and diminishment of the soul.[48] Similarly, a press release describing Burchard's keynote address at the 1951 AIA convention noted his argument that the "architecture of a united world . . . would be no architecture at all if Soviet power dominates."[49] That is, *architecture,* as the supposed product of a creative individual with the freedom to design, could not exist under Communist rule, where standardized *building* would be the norm. Despite the array of forces advancing similar standardization in the American construction industry, during this period the architectural mainstream was focused on the triumph of free enterprise and individualism, the latter being a word with special connotations in a professional culture that celebrates the genius designer.

The fervent language of individualism deployed by these architects and authors was appropriate to the era of rabid anticommunism. Occasionally, Red-scare screeds were launched over the tables at the Octagon. In a 1952 meeting, Howard Eichenbaum, chair of the AIA Committee on the Architect and Government insisted that the membership be vigilant about the "conservation of our democratic way of life" by ensuring that architectural services remain in the free market, rather than in state building bureaus. Not just Communists abroad, but collectivists in power within the United States, had to be resisted. Comparing the situation of the AIA with that of the American Medical Association's fight against socialized health care, Eichenbaum decried all levels of government "where long range socialistic plans would absorb us as a profession, and our positions would become workers for those various bureaucracies who would become the architectural and engineering offices for a socialistic state . . . we have been warned." Of course, urban dispersal and other long-range planning activities championed by the AIA inevitably were "socialistic" in that they typically required government regulation to achieve their goals. Compared to Eichenbaum, most architects were more sanguine about government interventions. Later meetings were less hyperbolic; the Committee on the Architect and Government noted in 1955 that the vigilant could relax because "the favorable attitude of the present Administration

toward private enterprise" was fostering an economic boom that was great for the building industries. Moreover, while a few states like California still maintained an architectural bureaucracy, the federal government had abolished its Public Buildings Administration and had pledged to contract out for design services when it established the General Services Administration back in 1948.[50] Architects would be happy to take public money, but as independent contractors and not bureaucrats.

In the early 1950s, the AIA waited hopefully for federally mandated shelter and dispersal programs for which architects could sign lucrative contracts. The potential of profiteering from an outbreak of Cold War hostilities sometimes surfaced explicitly among representatives of the AIA. A 1958 report to the Hurricane Resistance Committee essentially recommends ambulance chasing for urban design: "The profession should not let other groups make inroads. A catastrophe is sometimes a blessing in disguise, in that it affords an opportunity for replanning on a finer scale . . . The leadership of an architect is imperative."[51] Despite his profession of interest in "a finer scale," the author of this statement doubtless was contemplating the tabula rasas of postwar Europe, and the grand scale of responsibility and reward offered architects for the redesign of those city centers. Back in the 1951 debate, the editors of *P/A* had expressed their disgust with this sort of mercenary activity, this desire for disaster. As they wrote, the use of civil defense as justification for "urban redevelopment . . . leave[s] us cold and rather shocked."[52] A number of their readers had written in agreement, appalled that architects would "sell their services and their pet schemes as indispensable for winning a war of unconscionable destructiveness," would jump "on the World War III bandwagon . . . to demonstrate this or that planning panacea," or would seem to yearn for the nuclear devastation that would "open the way for the remaking of man's environment."[53] This ethical issue would resurface during the 1962 debate.

In the meantime, Serge Chermayeff, old-school European modernist and Harvard professor, criticized the reduction of architecture from a conscientious profession to "nothing more than a business" that thoughtlessly conformed to a politics of free enterprise. In a 1950 lecture, he castigated Walker for views that, to Chermayeff, represented the connection of a commercial ethic with atomic age conservatism. Chermayeff believed the architect should not be a mercenary who thoughtlessly sells design services to any client able to pay, especially if that client is engaged in a nuclear endgame. Architecture's social responsibility was addressing global issues of basic shelter—neither bomb shelter nor industrial dispersal—and

working collectively with other nations and professions toward peace and urban community. Of course, as Richard Plunz states in his introduction to Chermayeff's writings, during the 1950s, concessions to the domestic politics of a militarized home front were "paramount to commercial survival for architects, leaving the progressives adrift."[54] Indeed, rather than architecture as social reform, the AIA and the mainstream profession were focused on promoting the ideas of architecture as a business, a science, and an arm of the military-industrial complex. Many historians and critics have noted that the aesthetic of modernism may have been widely accepted in the United States of the 1950s, but not the social ideals of its European theorists like Chermayeff.

Although the debate over professional duties to protect the public often came down to the difference between housing for all and shelter for some, it was not just old socialists who were critical of architecture for civil defense. Reacting to proposals for shelter surveys in the *P/A* debate, Lawrence B. Perkins of the prominent and business-like Chicago architecture firm Perkins & Will, ridiculed the prospective appraisals of other U.S. cities as impractical and uneconomical:

> By all means, let's have a survey. Let us, with great expenditure of time and effort prove to ourselves what five minutes of casual reflection would prove equally well—namely, that the cost of making tens of thousands of buildings safe would exceed the value of the buildings thus protected. . . . An additional obstacle: can you visualize the problem of visiting tens of thousands of buildings, studying their needs for reinforcement, writing volumes of recommendations, and then, above all, causing the owners to actually do something about it?[55]

By 1961, the OCD and AIA would visualize, and embark on, exactly what Perkins describes—except the program would be for fallout, rather than bomb, shelters. Ironically, Perkins's business partner, Philip Will, would be the AIA president most responsible for leading architects into this civil defense survey work. What Will would depict in the early 1960s as the rational response to nuclear holocaust, his partner had dismissed as fantasy a decade before.

DEBATES ABOUT AIA INVOLVEMENT

When Will laid out the duties of architects and asked them to "participate vigorously" in civil defense, many, perhaps most, AIA members were in

general agreement with their board and president. Others held no strong opinion either way. But Will and the AIA also were criticized heavily for the institute's promotion of civil defense. Some critics charged that the fallout shelter program did not do enough to protect U.S. citizens, though more dissenters believed that it was an absurd and unethical program for architects to endorse. Corsbie and Rice were the key proponents of the "not enough" view. Rice, drawing on Edward Teller's proposals for vertical dispersal (the two were colleagues at the UC Radiation Lab), had asserted in 1958 that architects should lead the way underground, designing structures that can "duplicate existing surface facilities."[56] Corsbie put his argument forward as chairman of the National Institute for Disaster Mobilization, a "forum and clearing house on civilian and industrial protection" founded during World War II. As Corsbie sardonically observed, "It does a person no good to be safe from fallout if he is already dead from the effects of blast and heat."[57] Since Corsbie was undoubtedly the most knowledgeable architect in the United States when it came to the civil effects of nuclear warfare, his words ought to have been heeded by those debating civil defense plans. The case he made for expensive, deep underground blast shelters got little recognition within the AIA, however, or among the general public, for a variety of reasons, not least the excessive social and economic costs of constructing a parallel nation below the surface of the earth. Instead, the attention of the board and staff was dominated by a mounting protest over their actions, and over the role of architects in society: Were architects neutral designers or partisan planners? And if partisan, then whose side were they on?

In late 1961, a group of architects, critics, and educators came together as an ad hoc team to formulate a response to Will's letter to the membership, and to critique the numerous articles on civil defense and its techniques that again were appearing in the AIA's *Journal* and *Memo,* as well as in other architectural publications.[58] The statement of the ad hoc committee was published on the back page of *P/A,* the main dissenting journal, in May 1962, along with a request from Creighton that readers respond to the magazine with their views. Although he noted that the "AIA has no official position," Creighton drew attention to Will's letter outlining the duties of architects in civil defense. "I have talked to very few professionals who agree," he wrote.

However, when the protesters tried to purchase advertising space in the *AIA Journal* to register their opinions in the official forum of the professional association, they met with censorship. William Scheik, AIA

executive director, first tried to deter the resisters with a personal refutation and appeal, based on his unique knowledge of fallout shelter gained in meetings with the OCD. "I believe," he wrote in a six-page letter addressed to the group in June 1962, "the good AIA members who signed this paper would not willingly wish to disseminate statements which have no basis in fact."[59] But the petitioners would not be turned away: "We have no desire to debate with you the merits of the points you raised regarding either the value of shelters or the role of the Institute as advisor to the Defense Department," wrote one of the group on their behalf. More precisely, their point was the need for openness to "different attitudes " within the AIA. Invoking the status of the petition's signatories, including "such respected corporate members and Fellows" as Victor Gruen, Clarence Stein, Henry S. Churchill, Walter Gropius, and Hugh Stubbins, the writer suggested that they had "reason to feel that the *Journal* was stifling, rather than encouraging, the expression of Institute members." The decision was to stifle, with the AIA board adopting a resolution stating that "the proposed advertisement . . . is of a political nature and shall not be accepted by the *Journal* since the *Journal* does not run political advertisements."[60] That is, protesting against AIA participation in civil defense was "political," though the participation itself was portrayed as neutral public service.

As it turned out, the board resolution was not the end of the issue. The group ultimately was allowed to publish its opinion in the *AIA Journal* in December 1962, not as an advertisement, but as an open letter to the membership. What led to the AIA altering its stance is unknown. Perhaps it was face-to-face lobbying by the protesters. Perhaps it was a desire to refute the protest publicly, which the institute did in a counterargument by Scheik, printed on the facing page. As published in both *P/A* and the *AIA Journal,* the statement of the ad hoc committee opposing institute participation in civil defense read, in part:

> We feel it is our duty to point out the architectural absurdity of a national shelter program. No architect is interested in designing and building for destruction; his purpose is to construct for the future. However, as the shelter question becomes more and more publicized, clients turn to architects for advice and, in some cases, specific recommendations. No "architectural" advice is possible.
>
> In the first place, the technical data available is contradictory, to say the least. The point from which an architect always begins planning—the program—is nonexistent . . . the question of *how* to design a fallout shelter is one with no real answer.

> But even more important to architects is the question of *why* we should even seriously consider fallout shelters on architectural terms. The planning of shelters is preparation, on psychological and physical terms, for war. It is anti-architecture. The purpose of architecture is the creation of environments in which civilizations can develop. War destroys what civilizations have built; therefore war is the antithesis of architecture.[61]

If war was the "antithesis of architecture," the obvious implication was that architecture's "thesis" should be peace, and its central occupation the planning of peacetime uses of the built environment. In many ways, the wording indicates a struggle over the essence of architecture and the ethics of the architect. Should the architect participate in creation or destruction? Should the AIA be reducing architecture to the status of minimal shelter, a technical solution to an insoluble problem? The letter suggests that if architects participated in preparations for nuclear war, this would represent the end of civilization's development. Moreover, the phrase "anti-architecture" places in question the status of architects working for civil defense: were they still architects, or were they defense intellectuals, businessmen, researchers, or some other incarnation?

Scheik's counterargument attempted to justify the AIA's activities and relationship with the OCD by addressing each point in "direct comparison with the signed statement." Professionals entrusted with the safety of the public, Scheik suggests, must take a more sustained approach than the public itself, which "vacillates between apathy and concern for protection." The AIA, through the Construction Industry Advisory Committee, had taken this approach without doing "anything in a political sense to influence legislation on shelter programs." In contrast to any suggestion of politics in its dissemination of knowledge about civil defense, Scheik claimed that the AIA board and staff had operated from a "strictly objective appraisal of this information, involving neither emotion nor philosophy, [and] the men who heard these discussions concluded that the . . . shelter program was reasonable." Finally, the executive director of the AIA ends with a series of images that play off the petitioners' comments about architecture and civilization, particularly its civilizing mission:

> I don't understand the philosophy that planning for shelter is "anti-architecture" or psychological preparation for war. American colonists built stockades when living among hostile Indians. History offers examples of defensive architecture not considered as demonstrations of aggression. In the event of a holocaust, some must survive to build again.[62]

The language deployed here, and the choice of analogy, places the AIA position solidly within the discourse of the postwar liberal consensus. The appeal to professional expertise over public opinion, the invocation of modern objectivity among "reasonable" men, and the conjuring of colonial stockades amidst "hostile Indians" all represent an operational consensus among educated white males who continually reproduced themselves as the agents of national progress and protection. And in a clever reversal that Tom Englehardt argues is key to white American identity, the victor becomes the victim of threatening "others." For Scheik, fallout shelters, like colonial stockades, were merely a "defensive architecture" and did not represent "aggression."[63]

In the months following their publication of the protest statement, both *P/A* and the *AIA Journal* printed numerous letters to the editor that picked up on the language of threat and consensus to argue both sides of the shelter issue. Both sides of the debate would claim to speak for the development of civilization rather than its antithesis. On the pro–civil defense side, one architect wrote from Milwaukee to express his "unbiased viewpoint" in favor of Scheik's perspective. "Prudential thinking," according to this correspondent, compels consensus: "Full collaboration of all related professional groups and civic authorities" is necessary to develop environments safe from "all latent vulnerable aspects." Another wrote from Los Angeles County with the rhetorical question: "Is there any technical aspect of architecture on which the data is not conflicting? . . . The continued existence—not to speak of the improvement—of our civilization is threatened. We are obligated to defend it."

His colleague from suburban Chicago agreed with President Will that the civil defense project "may conceivably be the most important ever tackled" by architects, who at that moment were "working effectively in cooperation with the Government agencies without fanfare or extravagance."[64] Unsung, but pragmatic, professionals were taking responsibility for national security and civilization. For some more strident correspondents, the language of early 1950s anticommunism continued to structure their response to any criticism of federal policy related to the Cold War; one architect from New York City denounced the treasonous, peace-loving petitioners:

> It is a well-known fact that the various pacifist groups in this country and abroad are infiltrated by Communists . . . It is appalling to find that so many architects have fallen into this Communist trap. It indicates that, while they

> might be fine architects, they are naive about the political implications of international events . . . It is imperative that [the AIA support the OCD] in the defense of the United States. To take any other course can only be called an act of subversion.

For this writer, "the pacifist approach to the problem of war" had been refuted once again by President Kennedy's success in making the Soviets remove missiles from Cuba—a tough stance backed up by military and civil defense was required when faced with a "totalitarian threat."

In contrast, a critic of the consensus demanded by a fallout shelter program wrote from Denver to complain how "our country, which gives lip service to the importance of the individual, has suddenly become a receptacle of mass hysteria. The desire to conform to the accepted pattern has stifled creative thought and has almost drowned reason in a sea of mediocrity."[65] This "grave-digging acquiescence," according to another New Yorker echoing earlier debates, was "tantamount to withdrawal from a larger responsibility—that of being Architects, rather than mere practitioners." Fallout shelter design, this correspondent confirmed, was "anti-architecture" because "architecture is manifest in the ever-changing surround of light and air, and in the beauty of the configurations that materials assume therein." The pleasurable, sensuous experiences made possible by design were incompatible with "holes-in-the-ground."

The aesthetic claim that architecture was about beautiful spaces surfaced rarely in the civil defense debates, however. More commonly, critics bemoaned the neglect of social responsibility by "mere practitioners." Worse yet, wrote one Indianapolis architect, were "the hucksters, who ply upon war scares and other tragedies to fatten their coffers." The pragmatic, business angle of the practitioners was sent up effectively in an ironic letter from Pennsylvania, addressed to Creighton:

> The rest of us do not believe in building home shelters either, but at least we do not talk about our reasons as openly as you do . . . you do not even realize that architecture is just another business . . . Of course shelters will not work . . . but a lot of good, easy fees will be paid by the Government. And why let the engineers take the cream off the milk if we architects can do the work after a week's course by the Department of Defense? Your idealism sounds fine, but I would rather be a patriot.[66]

In the context of architecture for civil defense, what made a patriot—or a professional—was the very nature of the debate. One optimist wrote from

Manhattan wondering what his peers meant by "saving America." Was it the existing, oppressive "way of life" that was to be preserved by civil defense?

> Down South, on a recent business trip, the question of H-bomb shelters came up. Shall we build "separate but equal" shelters for the Negro? If we do, will that "way of life" prevail after the holocaust? . . . I suggest that the Southern shelter building dilemma be resolved by building to live together above ground. I think that would be much more effective as a measure for survival in the world-wide ideological competition.[67]

Although, like many Northerners, this architect associated the race problem with an undifferentiated territory below the Mason-Dixon Line, his idealistic solution of shelter for all imagined a more unified national community. He seems to suggest that correcting social inequities, in itself, would be a Cold War survival strategy.

Finally, on the side of civil defense pragmatism, an architect from Westchester County pointed out that, like nuclear war, "a tornado is also a terrifying thing"; storm cellars are built, why not fallout shelters if "it gives the client a little peace of mind?" Questioning whether it is for architects to "change man's essential nature," which is to build "monstrosities" out of "fear and pride," this writer somewhat cynically concluded that he could "see no reason why an architect should not build shelters for people, provided he tells them beforehand how useless he thinks they are." The struggle between "emotional reflexes" and "professional obligation" similarly underpinned a letter from John W. Hill, architect and professor at the University of Kentucky. The "terrible statistics" associated with the destructive power of nuclear weapons "are not ameliorated by ignorance," argued Hill, and they amount to "a genuine contemporary threat."[68] Even if they were emotionally or politically opposed to preparation for war, it would be best for architects to do their part, providing the vital public service of civil defense. This is exactly what Hill decided to do, later cosponsoring with the OCD a fallout shelter design charrette (see chapter 5). And, in a postscript to the charrette publication, Hill further rationalized architects' participation in civil defense with the need to be realistic about the world, regardless of the aesthetic or symbolic repercussions. Like the AIA president, Hill deployed the third-person plural: "We believe that an acceptance of the ironies and paradoxes of our time and a reflection of their contradictions in our building is as important to the validity of our architecture as is the expression of the unequivocally good."[69] As will be

seen in the final chapter, the architects of Boston City Hall used almost identical language to justify their rugged and assertive design for that building.

As the preceding letters and statements indicate, there was a parallel between how each architect defined the threat of the Cold War and the extent to which she or he embraced the solution of a militarized home front. Some of them, perhaps those who only wished to express the "unequivocally good" in their design work, tended to promote better shelter for all rather than fallout shelter, and claimed a higher ground where architects eschewed business-based decisions and nuclear saber rattling. Their ethical course involved improving the quality of life in the United States through ameliorating social problems, rather than wasting national resources on war. As one architect wrote in response to the 1951 *P/A* debate, "Peace is quite as honorable an American pursuit as war."[70] Other architects who foresaw the likelihood of nuclear war, or just a good opportunity to participate in national security, embraced the program of protection. To them, the need for civil defense to protect citizens was crucial because the threat to the nation seemed more "genuine" all the time. By participating in this discourse of external threat and reasoned response, these architects were helping produce the national resolve necessary to winning the Cold War. As a reward, they might achieve the status of defense intellectuals. Even better, in Will's words, they may be appointed to ambassadorial positions, reflecting their abilities in "architectural statesmanship."

"ARCHITECTURAL STATESMEN"

In addition to making a contribution to the national Cold War cause, the AIA board and staff also believed that there was much to be gained for professional identity through participation in civil defense. Service to the highest levels of government, including the Department of Defense, would be key to the legitimacy of the profession. Some of what was at stake in partnering with government agencies and achieving a leadership role in the construction industry was highlighted in issues of the *Journal* previewing the 1962 AIA annual convention. A keynote panel at the convention would discuss the "Second Report on the Profession" prepared by the AIA Committee of the same name. The theme of the report was "comprehensive services," expanding architectural practice to encompass more aspects of development: preliminary financial and property analyses; promotion

and marketing; construction management; and other research and support.[71] The concern here, as with so many AIA activities of the postwar period, was to augment and solidify the architect's status in the nation's economic, political, and cultural life.

Architects' reputation as generalists often was proposed as justification for their leadership roles in civil defense and in other endeavors. AIA staff had made this explicit the previous year in their description of a "proposed working group" on civil defense to be formed within the National Academy of Sciences: "We think it is most important that architects be included because of the general tendency of engineers and scientists to attack things piece-meal." These maneuvers represent a struggle for leadership among the professions that was more about discursive claims than the realities of expertise. The AIA director of public affairs wrote about participation in shelter programs: "I think we have never had a better chance to act as authorities in something that has timeliness. I don't know how well organized the structural engineers are but I should think while they are more appropriately involved, possibly the public would look to us first."[72] Since engineers had an inherent claim to authority in technical matters, they were "more appropriately involved" in civil defense. In addition, they were perhaps less on the lookout for opportunities to impress potential clientele with their professional qualifications. The AIA would see to it that the government and the public made the initial decision to turn to architects in times of crisis. Architects may not be authorities on the timely subject of civil defense, but they would "act" as such.

The AIA believed architects could be more than mere subject matter experts. They could lead and organize teams of experts, and drive policy making and implementation in their communities. For example, the institute envisioned and encouraged architects to be local point men for initiating and lobbying for the OCD agenda; subsequently, architects could help coordinate the civil defense surveys and planning projects. In November 1962, as the OCD accelerated its program in response to the Cuban crisis, Scheik explained in a letter to all AIA chapter presidents that new, abridged training sessions in fallout shelter analysis and design would be made available to nominated architects and engineers: "It is hoped that when the civil defense coordinator in your area calls, you will cooperate with the official in helping in the arrangements for the workshop and in allotting quotas to various construction industry groups for attendance at these workshops."[73] In a short summary of architecture for civil defense written at the request of *Architectural Record,* the chief

architect for the OCD, Robert Berne, succinctly framed the "role of architects and *their* consulting engineers."[74] As ambassadors for the civil defense program, architects would mediate the competing expectations and practices of other professionals, civil defense planners, and citizens in their communities.

President Will regularly called for no less than "architectural statesmen," associated with and managing other professions to "ensure the survival of the human species."[75] The word "statesman" conjures up images of wise, respected, and well-connected male diplomats solving domestic and foreign policy issues in the best interests of their nations. In particular, Cold War statesmen who played the high-stakes game of nuclear diplomacy enjoyed reputations (well-founded or not) as steely political realists. In the face of the Red Menace, American statesmen like George Kennan, as evinced by his "Long Telegram" and other writings, purportedly produced policy positions informed by expertise, objectivity, and realism, in contrast with earlier forms of subjective and personal diplomacy.[76] The AIA's definition of statesmanship paralleled that of Cold War foreign policy makers. Architects participating in civil defense first had to be objective and hardheaded about the threats before they could imagineer a response. Will believed "that the profession of architecture can produce such men of vision who rise beyond the humdrum of busy-ness and business." On the other hand, Will's characterization of the "architectural statesman" and his role constantly and confusingly slipped between the need to meet the threat of "thermonuclear suicide," and the hope of receiving commissions to design just and equitable "total environments."

In some ways, Will's position is modeled on the modernist project to produce a better society through environmental design. The "total environment," effected nationally and then internationally, would solve social problems and, by extension, global conflict, through architectural means. Although he reluctantly admits that within the Cold War context "of turmoil and struggle it would be brash indeed to call it exclusively the age of the architect," Will nevertheless concluded that if the United States continues to expand demographically, economically, and politically, "it follows that the welfare of [the] country rests heavily in the hands of the architectural profession." With this grand mandate it seemed crucial that "architects should step out of the anonymity of their drafting rooms into the public arena, into politics." Right at the moment that AIA staff were disclaiming the political nature of the institute's contribution to civil defense planning, and trying to censor the political critique of the protesters,

the AIA president was encouraging the membership to become more politically active. For the AIA, civil defense participation represented a first step out of the drafting rooms into that new arena where architects would lead other professions toward the ultimate goal of social welfare, at least within the confines of the liberal consensus.

CONCLUSIONS

Following the publication of the argument and counterargument in the *AIA Journal,* William Scheik was happy to pass on to the AIA board a letter written by his respected predecessor analyzing the fallout shelter controversy. This correspondence from Ned Purves is worth quoting at length because it summarizes how AIA staff operated independently of the membership and how AIA headquarters justified its liaison with the OCD; it also presents the AIA's internal definition of "architectural statesman":

> Regardless of resolutions, policies adopted by a Board of Directors, and positions taken by an Executive Director (who most of the time has to act on his own as issues arise too suddenly to permit recourse to formal authority)[,] the members of the AIA being architects will always exercise that fierce independence which is a cardinal characteristic of the species. An architect is inclined to express himself quite vehemently along lines of his individual convictions usually without the cold calculating consideration of a statesman for the impact of his expression on the public and on his own fortune. This candor is honest and noble if annoying . . .
>
> [The OCD has] asked the AIA to collaborate with it in an activity which certainly harms neither the profession nor any individual members. In doing so, it has recognized the profession's value to the country. This is a point which the manifesto seems to have overlooked. Whether fallout shelter design is pro-architectural or anti-architectural is a . . . question which appears to me to be without significance to the public or the government. However, the raising of the question by architects cannot help but cause the public to wonder a little more about the architect's role.
>
> Probably the shelter program and competition will be forgotten in a few years unless we have real trouble. An organization which has acquired a reputation for vacillation and for frustrating the friendship of the government may find itself remembered unfavorably.

Scheik added that dealing with government especially required prompt action and the AIA's "hands would literally be tied in this area . . . if policy

were made by the membership at large."[77] That is, while official AIA policy might reflect the democratic decisions of the membership, everyday AIA procedure was to be undertaken with "the cold calculating consideration of a statesman." Scheik, Will, and others believed all architects *should* possess statesmanlike qualities, though they did not pretend to believe that all architects did possess them. In spite of public claims to the contrary, the AIA board and staff seemed to think that most architects, trained into a "fierce independence" as artists, lacked the objective rationality of the scientist, or the shrewd realism of the businessman—and they certainly lacked savvy for public relations, for making the most of it when outsiders have "recognized the profession's value to the country."

Regardless, then, of the resistant views and practices of many of its members, the AIA strove to render architects essential to the execution of an architecture of national security. In addition to, or perhaps instead of, an architecture of delight, "comprehensive services" might result in practical, profitable, and protected built environments. Architects wanted to participate in research on a par with other defense intellectuals like social scientists. The AIA lobbied on their behalf, attempting to convince the FCDA and federal legislators that knowledge about buildings was necessary for fighting the Cold War. The AIA provided credibility to a civil defense program that struggled against public apathy, political neglect, and what many believed to be preposterous assumptions about the possibility of survival. In offering official channels to access professionals; in communicating the civil defense message; performing research; running architectural competitions; and in reviewing, editing, and designing publications, the AIA attempted to demonstrate that the profession was ready and able to provide expertise to the rationalist project of the state.

If architects could successfully claim the Cold War landscape as their own, they might also claim profits. In its consideration of a key agenda item, "National Activity on Fallout Shelters," the AIA board reiterated its earlier *Policy Statements:* "While volunteer service by architects as citizens is a tradition in any emergency situation . . . development of any defense projects requiring instruments of service (i.e., written analyses, drawings or specifications—beyond discussion and conference stages) should be undertaken only on a contract basis as architectural commission."[78] The minutes from this 1961 board meeting indicated a burgeoning new source of fees for AIA members: architecture and engineering firms were embarking on hundreds of contracts to conduct fallout shelter surveys of existing buildings. In the subsequent decade, some firms

would design, and some would actually build, shelters in new construction. And even the AIA itself, in an unprecedented move, would contract with the OCD to research and promote fallout shelter design in various ways. Contrary to the prediction of Purves, fallout protection was not soon "forgotten," and the AIA did its part to make sure that this was the case.

5. PERFORMING ARCHITECTURAL EXPERTISE

Designs for Fallout Shelter

> Since buildings are designed by architects, the architect is the key person in the fallout shelter program.
>
> **—"Background of AIA's Involvement with OCD" (AIA staff, 1969)**

In August 1962, the American Institute of Architects' (AIA) Division of Public Affairs announced to its board that, in the present political climate in Washington, "the time is ripe for advancing the arts, architecture, and planning."[1] Two months earlier, the Kennedy administration had mandated "good design" for government buildings in its "Guiding Principles for Federal Architecture," sent as a directive to the heads of all federal agencies. Through its collaboration with the Office of Civil Defense (OCD), the AIA hoped to demonstrate that fallout shelter for federal office buildings—and for other institutional, industrial, and commercial structures—was indeed good design. The term "good design," though, has as many definitions as it has proponents—a problem the AIA and OCD would expend much effort trying to solve.

For civil defense officials, and perhaps for ordinary citizens as well, good design might be defined according to the demands of technological functionalism—whether the structure could keep Americans alive. To this end, the AIA and OCD strove to affect construction requirements through amending the national building codes, among other endeavors. For building owners and architectural patrons, good design could mean cost savings, efficient space planning, and other project-specific goals. For materials manufacturers, good design simply meant the specification of their products. Defense strategists and politicians might judge good design on its ability to sell civil defense and its geopolitical implications to the public, despite a lack of federal funding for fallout shelter construction. For the Kennedy and Johnson administrations, good architecture for civil defense would extend their vision of national welfare from everyday life to a

postapocalyptic society. Prior to the functional test of fallout shelter, which never really came, would be the political test: would shelters do the ideological work required of them by the OCD and by the state?

Meanwhile, neither the technical nor the political criteria of architecture for civil defense were enough to convince most architects that this new focus represented good design. Most architects subscribed to definitions of good design founded in aesthetic, experiential, programmatic, and other architectural categories. To reach these architects, the OCD sponsored three architectural competitions, two charrettes, and numerous other design programs to plan and promote fallout shelter (Figure 5.1). The OCD and AIA strove to present models that would inspire and guide their audiences, while demonstrating that, with good design, fallout shelter could be provided in dual-purpose spaces without affecting a new building's cost, function, or aesthetics. Fortified approaches inspired by world war–era bunkers were unnecessary for stopping radiation. A discourse about "good design" would help architects see the connection between subtle designs for fallout shelter and the buildings they admired.

FIGURE 5.1. Graphic from front cover of Office of Civil Defense, *National School Fallout Shelter Design Competition Awards* (Washington, D.C.: Government Printing Office, 1963).

The OCD's alliance with the AIA was important because civil defense officials were reluctant to be seen as attempting to influence architectural style. They were pleased, though, when good design for architects began to mean something different from the glass-box modernism of the 1950s, which typically (though not necessarily) offered less fallout protection than alternatives. Leading modernist designers in the early 1960s were initiating a new architectural aesthetic featuring solids and rough textures rather than sleek and transparent curtain walls. However, the bunker architecture interpreted in the next three chapters was not defined exclusively by formal characteristics. Concerns for building security required architects to consider tectonics, mechanical systems, surveillance, privacy, and other aspects not visible in the architecture's formal manifestation. The development of this bunker architecture as both an aesthetic and an ethical approach can be traced in OCD-AIA projects and publications of the 1960s. The fallout shelter program was not the cause of bunker architecture, but the integration of architecture with civil defense programs helped produce the meanings associated with these buildings during the early Cold War. Since then, the bunker has remained the primary popular image of Cold War civil defense. The OCD was always ambivalent about these associations. Officials insisted that bunkers were unnecessary for fallout protection, and the image of the bunker was antithetical to the OCD's public relations strategy. But a useful bunker architecture was becoming popular among architects. It was a conundrum that the OCD never resolved: Subtle protection or a bunker architecture? Pragmatism or propaganda?

THE GREAT SOCIETY AND "LIVING MEMORIALS"

The fallout shelter designs promulgated by the OCD and AIA can best be understood against the backdrop of President Lyndon Johnson's Great Society, with its national vision of social welfare. In the mid-1960s, Johnson introduced sweeping legislation to expand what historians have called the "reluctant welfare state." The result was to be the "Great Society," a collective image meant to capitalize on wide-ranging 1960s critiques of the previous decade's consumer and corporate individualism. Through community participation, for example, Great Society urban programs would strive for social reform, in addition to mere renewal of the built environment. As Johnson said during the 1964 campaign speech in which he coined the term,

> The Great Society is a place where every child can find knowledge to enrich his mind and to enlarge his talents. It is a place where leisure is a welcome chance to build and reflect . . . It is a place where the city of man serves not only the needs of the body and the demands of commerce, but the desire for beauty and the hunger for community.[2]

Johnson's vision of a new "city of man," one that solves equally the problems of commerce, beauty, and community, parallels the OCD's program for a secure nation in which buildings offer fallout protection without sacrificing the triad of cost, aesthetics, or functionality. Johnson's vision suggests that cities would be made up of educational, cultural, and social institutions that together would guarantee the overall welfare of citizens. Likewise, civil defense design projects typically proposed building types intrinsic to a developing welfare state, such as health and educational facilities, community centers, and government office buildings.

In particular, civil defense promoters hoped to demonstrate to politicians and the public a logic of duality: with a few minor alterations or considered design decisions, everyday American buildings, especially the public buildings found in every community, could serve a secondary purpose as fallout shelters. For a program concerned with the ultimate welfare—we might say "survival"—of all citizens, where better to focus efforts than on the nation's existing and proposed welfare institutions? The dual-purpose fallout shelters to be designed by architects under the influence of OCD criteria would be monuments performing and symbolizing the commitment of the nation to its citizens. In conjunction, they would commemorate the individual participation necessary for the nation to prevail in the Cold War. In the "total war" waged in the twentieth century, all citizens were mobilized—and targeted.

Dual-purpose fallout shelters were akin to the "living memorials" widely debated and built in Europe and the United States to recall the sacrifices of the world wars, while benefiting society at the same time. Traditional, sculptural memorials still predominated after World War I, but to conform to modernist tenets in art and architecture, living memorials were offered up as *both* functional and symbolic, as buildings rather than sculptures. By 1945, there was widespread concern that modernism had undermined the traditional architectural language previously used in war memorials to express a common, national sentiment. Prominent architects and writers pointed to this problem during World War II, worrying whether monuments could be designed and understood at all, given the

light, reflective materials and lack of ornamentation that constituted the International Style.[3] The return of solid masses and dense materials in the late 1950s–1960s was driven partly by a desire to bring back to architecture an element of public expression.

Moreover, it was perhaps inappropriate, or at least politically difficult, to memorialize the glories of immediate past wars while the Cold War continued in Korea and elsewhere. Better to think about the present and future of the Great Society. The historian of the living memorial, Andrew Shanken, concludes that in place of "official history, it promotes the present; collective memory yields to collectivity or collective experience."[4] Of the dual-purpose, living memorials that were built in the 1920s and the 1950s, most housed communal institutions such as libraries, auditoriums, schools, and community centers. The dual-purpose fallout shelter designs proposed by the OCD and AIA, in conforming to the rhetorical program of the Great Society, commemorated the collective effort necessary to ensure that future Americans enjoyed equal access to community institutions. As with any war memorial, these Cold War monuments combined abstract sentiment about death with a sense of ongoing commitment to the nation.

Civil defense programs resided at this nexus of social welfare planning and national security rhetoric. By the mid-1960s, civil defense planners had fully embraced the duality of living memorials as a model for the provision of fallout shelter. They not only adopted the rhetoric and policies of President Johnson's Great Society, but the building types studied in OCD architectural programs, such as the competitions, strove for the physical incarnation of the welfare state. As social historians have concluded, however, Great Society initiatives accomplished more in rhetoric than in practice. Congressional resistance to welfare statism ensured that any programs would be drastically underfunded.[5] The political ambivalence about social welfare parallels that about civil defense, itself an ultimate vision of the welfare state—that is, of a state where all citizens would be under the care and control of the government.

THE FAILURE OF FALLOUT SHELTER FUNDING

Great Society rhetoric, which bolstered the concept of community sheltering, raised the possibility of federally funded fallout shelters. Funding for fallout shelter construction was crucial to the development of the shelter stock and the correction of deficits. Civil defense officials and design

professionals were well aware of—and up front about—a dramatic fallout shelter deficit in suburban and rural areas. Moreover, they expressed concern that the population continued to grow at a rate faster than the number of shelter spaces. Although there had been much construction activity in American suburbs since World War II, it was largely of a type inappropriate to fallout protection. For example, many wood-frame, single-family houses (even the ones with basements) were disqualified because of light materials and too many wall openings. Meanwhile, many schools and strip malls were built in a cellular configuration with a simplified modernist aesthetic of flat roofs, glass curtain walls, and inexpensive slab-on-grade construction. To succeed with the OCD mandate to protect all citizens, deficits would need to be corrected through new construction—but new construction with specific architectural characteristics.

Since the OCD posited that geographic shelter deficits would need to be remedied in new construction, it maintained that the federal government was obliged to extend monetary aid to building owners for covering extra costs associated with fallout protection.[6] Building owners agreed. Most institutions could not afford fallout protection in new construction without federal aid. Even though the OCD claimed that fallout protection never would require an increase of greater than 1 or 2 percent on a construction budget, this small percentage easily grew into large sums on institutional building projects. Institutions typically fund construction on shoestring budgets of government money and charitable donations, so fallout shelter inevitably seemed an extravagance. Federal incentives were needed.

However, the trajectory of fallout shelter funding parallels the ignominious appropriations for other welfare state programs. It proved impossible to procure the appropriation of these dollars, so the OCD was unable to legislate the inclusion of fallout shelter in new construction, the way it was legislated in European welfare states and in Eastern bloc countries. The failure of budgetary requests for shelter construction in the United States is traced most directly through the travails of House Resolution 8200, legislation to effect congressional authorization of President John F. Kennedy's national plan for emergency preparedness. Specifically, H.R. 8200 outlined a Shelter Incentive Program that according to a Department of Defense press release,

> would provide federal grants of something less than actual cost for every shelter space meeting approved standards and created by public, or private,

non-profit institutions, engaged in health, education, or welfare activities. A substantial number of these shelters will undoubtedly be dual purpose, serving a useful community purpose, in addition to offering protection from radioactive fallout.[7]

House Resolution 8200 also proposed a funding scheme for fallout protection to be included in the construction of new federal government office buildings.

Not surprisingly, the AIA and other member organizations of the OCD's Construction Industry Advisory Committee closely followed the progress of H.R. 8200. The AIA previously had deemed it a public service to include fallout shelter in the design of buildings. But here was an opportunity to augment a project's budget, and the architect's own fees along with it, given that fees were determined as a percentage of a building's final budget. Meetings of the Advisory Committee included long discussions regarding the logistics of a Shelter Incentive Program. How would payment work? What specific materials or methods of construction might be authorized? And who would parse out the aspects of a structure that were necessitated by everyday building function, and those required by fallout protection, and which were therefore eligible as the federal share of the building's cost? As it turned out, it was the designers themselves—assuming they had completed the OCD training and been certified as fallout shelter analysts—who would approve their own modifications and claim the incentive payment on behalf of their clients, without even submitting drawings to the OCD.[8] The potential for abuse of this arrangement was never tested, since the legislation never passed.

The AIA did its part at the congressional hearings for H.R. 8200, sending Executive Director William Scheik and architect John McLeod, chair of the Construction Industry Advisory Committee (and designer of the FCDA training center at Olney). Eliding the controversy recently played out in the *AIA Journal,* Scheik stated to the chair of the hearings that the "majority of architects comprising the membership of the American Institute of Architects believe that provision of shelter is both advisable and feasible."[9] On the recommendation of these hearings, the House of Representatives overwhelmingly passed H.R. 8200 in September 1963. This was the first major expression of congressional support for civil defense—the first and only, because the legislation soon stalled in the Senate. In the meantime, the House Appropriations Subcommittee slashed the OCD's budget request for 1964. This time the Appropriations Subcommittee went

on record with an emphatic statement: "We haven't changed our minds. We're not building any fallout shelters, period."[10] Later that year, the OCD attempted to append the Shelter Incentive Program to military defense legislation related to the antiballistic missile (ABM) program then under development; fallout protection in this case would be the strategic and financial corollary of ABMs. But again, shelter funding was rejected by Congress, and the agency eventually gave up trying to secure it.[11] Since the OCD could not promulgate the Shelter Incentive Program, it became increasingly vital to make fallout shelter a normal element of the architectural design process.

FALLOUT SHELTER AND BUILDING CODES

Several months before H.R. 8200 received its congressional hearing, an OCD official appearing in front of the Construction Industry Advisory Committee outlined the strategy for promoting what he called "the architectural approach to shelter." In contrast to lingering 1950s proposals for an expensive construction program of blast-resistant, subterranean structures, this new approach would require only subtle and affordable design modifications to everyday buildings. As this official stated, echoing earlier analogies to natural disasters, "We must educate people to the fact that it is not necessary to go underground to obtain adequate fallout protection. Shelter is a construction factor, similar to earthquake construction, which can be incorporated in buildings by architects with minor departures from the conventional."[12] Five years later, architectural engineering professor Albert Knott again naturalized fallout shelter in the manual he wrote to show the architect how "to design radiation protection into buildings as he now designs protection from the elements." Knott continued: "Architects have recognized that any building offers protection from fallout . . . [but some] provide protection which is less than adequate. The architect can use his creativity to provide adequate protection within all buildings." According to the footnote, "adequate" was defined as "satisfying Office of Civil Defense technical requirements" reproduced in Knott's appendix.[13] Design creativity was to be deployed, but the criteria for good design would be technical, and determined by the state.

To a certain extent, AIA participation in OCD programming can be seen as an offering of artistic skills to an agenda established and directed by engineers. Architecture traditionally has been characterized as an amalgamation of art and science, but with the technical specializations associated

with modernity, architects found themselves competing with engineers for the responsibilities of structural design. The AIA aspired to demonstrate that its members had skills to offer on both sides of the art-and-science divide. Better yet, the AIA believed that architects could mediate that divide. The AIA-OCD competitions and other events were architectural design exercises conducted within the context of engineering requirements, but the contribution of architects to civil defense was more than just window dressing.

The AIA had a hand in developing the technical requirements for fallout shelter through its research into building codes for the OCD. The complicated and regionalist building code landscape in the United States was a major roadblock for fallout shelter design. Because of this code confusion, the OCD found it necessary to seek advice from its partners on the Construction Industry Advisory Committee, especially the AIA. As it happened, the AIA's Committee on Safety in Buildings was debating an appendix on fallout shelter proposed by the Southern Building Code Congress just as AIA president Will was helping establish the OCD Advisory Committee in 1961. The Advisory Committee discussed code issues beginning with its earliest meetings. The central concern was that in "many areas, strict building code requirements preclude spartan shelter (i.e., due to excessive exit, illumination, ventilation requirements, etc.)."[14] In many localities, civil defense solutions were *illegal.* Making fallout shelter legal was the first step. But if the OCD was successful in convincing the nation's building code authorities that shelter ought to be included in their purview, it would represent a major victory for civil defense. Building codes might be the back door to legislated protective construction.

To promote the fallout shelter program, the AIA and OCD had to rewrite codes and standards. Ultimately, after several discussions with building code authorities, a research proposal emerged from the AIA's new Committee on Building Codes and Disaster Studies (which superseded the Committee on Safety in Buildings in 1963). The AIA contracted in June 1964 to act "as consultant to the OCD, [and] cause to be studied and prepared recommendations as to the inclusion of protective shelter provisions in the four national codes."[15] The institute subcontracted this work to the architectural firm Graves & Hill, of Lexington, Kentucky; John Hill, partner in this firm and professor at the University of Kentucky, was a voice of moderation in the 1962 fallout shelter debates in the *AIA Journal.* Regardless of their political position on civil defense, he believed, architects had a role to play as experts. Here, architectural expertise would

contribute to the promulgation of fallout shelter by endowing it with the status, influence, and mandate associated with the national building codes.

The "Scope of Work" for the AIA contract stipulated that the services would include the development of "a permissive building code Article based on OCD minimum technical requirements" and "administrative code provisions to permit relaxation of normal requirements during times of national emergency." As well, the contractor would study the text of the four codes to "determine areas that inhibit inclusion of shelter" and where shelter should be mentioned. Finally, the contractor was to research any ordinances mandating fallout or blast protection in other nations and recommend whether "mandatory shelter in new buildings should be initiated in this country."[16]

The last service listed is notable: making a recommendation regarding civil defense policy seems to overstep the bounds of the AIA and the Construction Industry Advisory Committee, which both claimed legitimacy on the basis of their policy neutrality. Furthermore, this seemingly put the AIA, at least in some small way, in the position of mobilizing architectural expertise to shape defense strategy, to the extent that civil defense was integral to the overall defense posture. Without overstating the case for architects influencing the Department of Defense, it can be noted how easily an advisory role slips into that of associate and, ultimately, advocate—a role the AIA would assume with the fallout shelter design competitions. The final result of this AIA contract was the publication *Suggested Building Code Provisions for Fallout Shelters,* which the OCD then began to promote to the different code authorities.[17]

For the AIA, though, the technical and administrative guidelines represented by building codes were only one aspect of good architectural design; for many architects, they were of secondary importance. The way architects tempered the power of building codes over aesthetics is indicated by the institute's contemporary policy statement on the matter: "The AIA believes that codes and regulations relating to buildings must provide for reasonable protection to life, health, property, and the general welfare while permitting the exercise of individual initiative on the part of the architect in selecting and improving design."[18] In the shadow of nuclear war, the phrase "reasonable protection" could be interpreted widely, according to an architect's position on civil defense: it could mean the expensive construction of underground bunkers against blast effects, or resistance to any preparations at all. Which was reasonable? Nonetheless, the statement reveals how the AIA could accommodate its policies to the requirements

of civil defense design. The provision of fallout shelter could be incorporated into architectural design and construction in the same way that architects already had incorporated other safety regulations to do with fire, utilities, circulation, or emergency exits. The language of the policy statement implies that buildings reflect the architect's mediation between technical considerations, guided by reason, and an imaginative aspect that is inspired by "individual initiative." By making building code suggestions, and at the same time providing aesthetic guidance in the form of architectural competitions, the AIA helped mediate between OCD technical requirements and conventional architectural design.

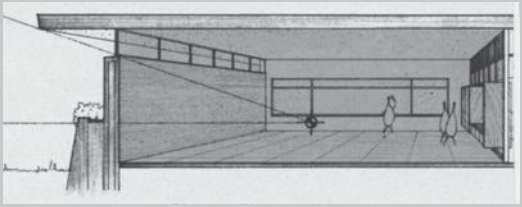
HOW TO DESIGN (PUBLIC) FALLOUT SHELTER

Before examining the competitions and other exercises that attempted to mediate between protective construction and good architecture, it is necessary to understand how to design fallout shelter. Fallout protection was predicated on two variables: *mass* and *geometry,* the latter a combination of distance and angle between the radiation source and the shelteree (see "Fallout Shelter Design"). The technical requirements of fallout shelter could be met using a variety of design approaches. In theory, upper floors of a gleaming glass skyscraper might offer good fallout protection, if they were far enough from adjacent horizontal planes (such as neighboring structures) and the roof slab above them was thick and dense enough. In practice, basements were by far the most common location of fallout shelter—despite OCD intentions—since an adequate PF could be achieved because of the mass of the foundations and backfill, in combination with the distance and angle between shelter occupants and the fallout radiation deposited at grade.

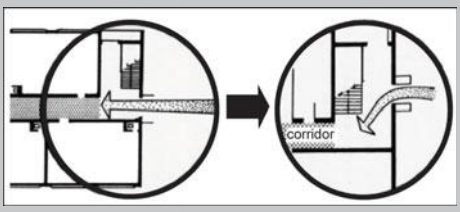
Calculations of PF assumed that DOD experts could predict where fallout might collect. For both the shelter survey and for myriad design exercises, fallout was understood as a fixed variable distributed uniformly on all horizontal surfaces, regardless of regional or meteorological characteristics, or geopolitical targeting strategies. That is, all horizontal surfaces were considered equally in shelter planning. This assumption at the very least ignored winds and rains, freezing, eddies, drifting, and draining of fallout into low spots. An engineering study noted these problems in 1962, concluding that "local variations in fallout" would be the "major problem for future research."[19] It proved impossible to control for all the variables, so this research never was pursued.

FALLOUT SHELTER DESIGN

Most design solutions to the problem of fallout shelter employed a combination of barrier and geometric shielding. As a whole, these (often subtle) design techniques were called *slanting* by the Office of Civil Defense.

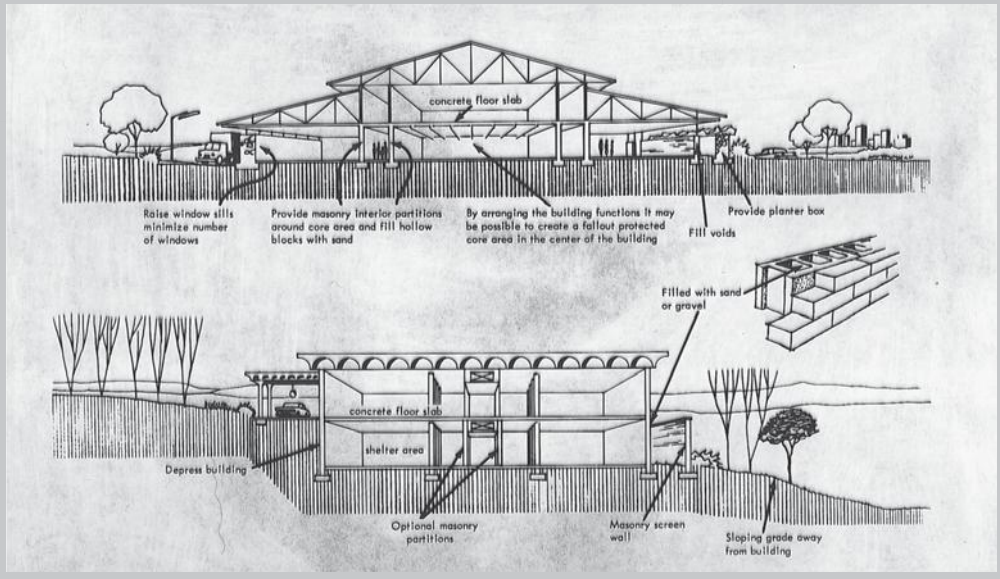


Radiation passes easily through standard doors and windows, so OCD officials recommended reducing the portion of a facade devoted to these architectural extras. Strip windows or clerestories were typical solutions to the enduring need for fenestration. Here a combination of overhangs, clerestory windows, and planters allows natural light to enter the building while providing geometric shielding from radiation (shown by dotted lines).



Simply moving an entrance a few feet to one side so that it no longer aligns with a main corridor could block radiation from reaching the shelter area of a building. This solution resulted in a "baffled" entrance, as in the modification shown here.

In these two sectional drawings, the Office of Civil Defense demonstrated alternative methods for achieving fallout protection in hypothetical, freestanding buildings of typical construction. Of course, each building and situation would be unique.


concrete floor slab
Raise window sills minimize number of windows
Provide masonry interior partitions around core area and fill hollow blocks with sand
By arranging the building functions it may be possible to create a fallout protected core area in the center of the building
Fill voids
Provide planter box
Filled with sand or gravel
concrete floor slab
shelter area
Depress building
Optional masonry partitions
Masonry screen wall
Sloping grade away from building

Increasing the density of walls with masonry and fill, along with strategic landscaping (earth berms, perimeter walls, planters), could boost a building's Protection Factor. The core area of a building also could be upgraded invisibly to afford adequate fallout protection by thickening walls and ceiling slabs.

Fallout protection did not require massive underground construction. Rather, it could be achieved with a few small changes to standard design and specifications.

Assuming the uniformity of fallout, then, other OCD-sponsored research developed technical and design fundamentals for shelter. A series of engineering case studies was completed in 1962–63 by architecture and engineering firms that had recently designed, or were in the process of designing, actual schools and hospitals, plus a few other building types or renovations of existing structures. The engineering case study contract allowed for the preparation of alternate sets of plans that projected how building designs might incorporate fallout shelter. By direct comparison with the building's plan without protected space, the architecture and engineering firm could delineate the "technical design information" and "future construction cost estimates" for providing fallout shelter in different regions of the United States.[20] A sample engineering case study is that for Hampshire High School in Romney, West Virginia. Twenty-one original blueprints for this modernist school designed in 1962 were complemented by seven alternate prints showing potential fallout shelter modifications. Since this was a basementless structure with glass curtain walls, shelter would have to be found in a protective core, in this case the double-loaded corridor. The glazed classrooms on either side of the corridor would be contaminated, but the corridor could be protected from radiation by adding thickness to the roof slab above it, increasing corridor wall densities, and placing baffles at school and classroom entrances.[21] The OCD hoped that case studies such as these would convince its audience that public fallout shelter could be achieved in any building type, even one-story, at-grade buildings with glass curtain walls.

Although most of the case study buildings were complete by 1964, almost none of them had been built according to the alternate sets of plans incorporating fallout shelter. When it followed up with architects to find out why, the OCD received many replies in the same vein. A partner in one firm wrote, "None of the shelters designed by us under this Program has been built, and it would seem unlikely that any of them will be constructed in the absence of funding assistance."[22] Overall, materials related to the case studies and to other OCD research reveal widespread interest in fallout protection among institutional administrators and their architects—but only if the money came from the Shelter Incentive Program or some similar source.

The OCD hoped to derive broader design principles from qualitative reviews of the quantitative construction and cost data supplied by the case studies. But even by 1964 OCD officials had to admit that "finding people qualified to do this job will be difficult. They must have a great deal

of practical experience, and they must understand civil defense."[23] The initial engineering case studies were conducted by architects and engineers who had taken the OCD training to become fallout shelter analysts. For the most part, though, they still had little experience designing protective structures. Despite almost three years of program development, it seems shelter design expertise had not filtered through the professions to the extent desired by civil defense officials.

As a result, OCD engineers handled the qualitative reviews of the engineering case studies in-house. Examples include the positive appraisal of a case study for the Music Hall at the University of Utah (Figure 5.2), a retrofit of a 1929 structure that proved fallout shelter modifications were compatible with existing buildings, even ones "richly ornamented with composite 'classical' orders of architecture, primarily modified Corinthina *[sic]*." The OCD was less pleased with the case study of Northwestern Hospital in Minneapolis. In a high-rise building where fallout shelter likely was available on upper floors, the reviewers wondered why the architects limited their analysis to basement areas of questionable habitability.[24] This oversight resulted in fallout shelter that was incompatible with the OCD goal of promoting shelter in aboveground spaces. These detailed qualitative reviews were not published individually; as one OCD official wrote, "this may prove to be embarrassing to some Architect-Engineers" if the latter had miscalculated or made poor recommendations about shelter space.[25] Instead, the general lessons gleaned from the case studies and restudies would form the fundamentals of fallout shelter design: barrier and geometric shielding. Once these fundamentals were established, the OCD would publish them continuously in its range of literature directed at professionals, building owners, and other decision makers.

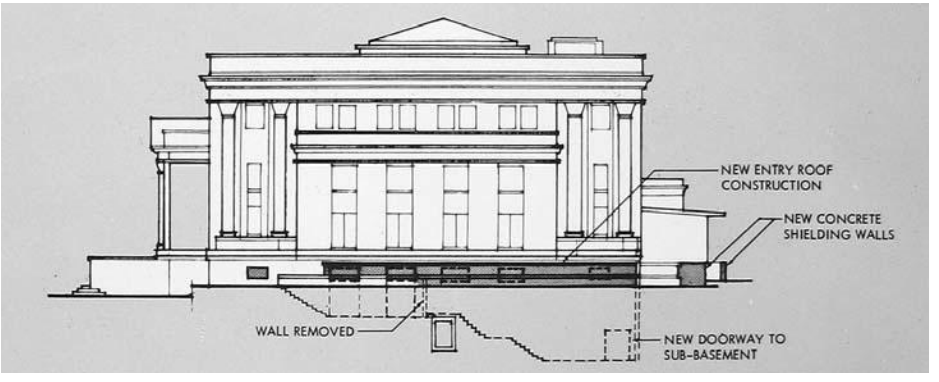


FIGURE 5.2. Music Hall, University of Utah, with alterations to improve fallout protection. From Office of Civil Defense, *Engineering Case Studies: Fallout Shelter Modifications* (Washington, D.C.: Government Printing Office, 1964).

SLANTING TOWARD PROTECTION

In concluding that the best defense from fallout came from a combination of mass and distance, civil defense architects and engineers conformed to a long history of military construction.[26] On the front lines, military construction had been characterized by attempts to clear large expanses of open space that could be monitored from massive, protected emplacements. Since World War I, these military bunkers have been made from reinforced concrete poured into rough formwork; thick concrete roof slabs and deep overhangs protect interior chambers, while allowing only the minimal openings necessary to control the surrounding landscape with surveillance and ordnance. Entrances are concealed and circuitous—"baffled" in civil defense jargon. Bunkers are partially buried to take advantage of the protection and camouflage offered by the earth, but because of the need to command surrounding space they have not been, by definition, underground structures. On the home front, the threat of aerial population bombing, introduced during World War I, mounted in the 1930s and became a widespread military strategy by World War II. The history of civil defense since that time reflects the necessity of protecting individual structures and citizens, rather than just the boundaries of cities or nations. However, if the safest solution to aerial bombardment is to build underground, this has not been politically expedient for civil defense programs outside of totalitarian states. Experts have been forced to consider the pragmatics of protection in aboveground structures.

In the early atomic era, protective design remained concerned with the explosions and fires familiar from knowledge of World War II bombing.[27] Experiments in Nevada proved, for instance, that a baffled entrance could block atomic blast pressures and heat waves from entering a shelter and that a reinforced core within a larger structure could protect its occupants from flying debris and collapsing roofs. Increased mass and distance would increase protection from a threatening outside. By 1961, the OCD had abandoned any idea of blast protection for the general public, and discussion of blast loads, firestorms, or building failures disappeared from OCD literature. Now shelter was deemed possible only from the effects of fallout, under the assumption that a building withstood the initial forces of destruction. In this new approach to shelter something like a baffled entrance remained applicable, but the point now was to attenuate radiation, instead of a shock wave, by making it turn corners. As an alternative to blocking radiation at the building perimeter, the OCD continued to

recommend that architects design a "protective core" where the concrete structure and stairwells would now block radiation rather than flying debris. Regardless of whether a building looked like a bunker, bunker design elements could be found behind its curtain wall. Even though protection from radiation did not require outwardly massive bunkers, a bunker architecture did offer better fallout shelter than other approaches.

Architecture for civil defense assumed many of the aesthetic and ethical characteristics of bunkers, for both practical and symbolic reasons. If the *aesthetic* of the bunker was entirely unnecessary, the appearance of a bunker symbolically satisfied a perceived need among the public and professionals for more robust protection than civil defense officials seemed to be offering. This residual concern for blast resistance proved difficult to edit or expunge. In particular, the OCD never ceased to struggle against the troglodytic image of civil defense shelters—even when effective shelter no longer needed to be subterranean. Two years into the National Fallout Shelter Program, the campaign against the buried bunker still needed to be waged *within* the ranks of the OCD itself. One engineer criticized the proposed OCD publication of a report on an underground steel arch type of fallout shelter. To be exact, he noted, the envisioned shelter was actually semiburied, or mounded, with a thick layer of earth shielding. While this critic admitted it "may be a matter of semantics," he recommended a more precise vocabulary to avoid "presenting more 'underground' shelter philosophy." He concluded that "getting away from the underground connotation would enhance the acceptability of this structure and the information."[28]

Aboveground shelter was believed to be more acceptable for a host of social, psychological, and environmental reasons that were aired in the fallout shelter research and debates of the early 1960s. The OCD thought it could more easily promote aboveground protection to professionals, politicians, and the public because fallout shelters would share space with popular community and welfare functions already funded, or encouraged, by the state. Therefore, the waning of underground, blast-resistant construction in OCD policy, alongside the waxing of a public fallout shelter program, effectively established that protected space would need to be dual-purpose. Certainly, there would be no widespread construction of single-purpose shelters on, or even under, valuable property in population centers. As with the National Fallout Shelter Survey, protected space would coincide with the accommodations of everyday activities: living, working, recreating, and above all, learning and convalescing. Civil defense planning would overlap with the nation's welfare institutions.

To convince Americans that shelter was possible in conventional structures, the OCD consistently restated its guiding principle on architectural design: if considered at the design stage, fallout shelter could be provided in new construction through slight modifications that would not affect the building's function, cost, or aesthetics. The OCD coined a term for this approach to fallout shelter design: *slanting.* The meaning of slanting was intended to be distinct from that of *hardening,* a word by then in common usage to describe the fortification of military and civil defense facilities against the destructive blast, thermal, and electromagnetic effects of nuclear weapons. In response to this general confusion of approaches, a defense academic under contract to the OCD provided the rationale for coining a new term: "The word 'hardening' in reference to shelters is used generally to mean structural improvement for blast protection rather than fallout protection. It is suggested that a different term be used in referring to increasing shelter spaces by ventilation or shielding improvements."[29] Hence, the coinage of *slanting* reflects the OCD's desire to emphasize that its policy was not to promote fully protected, or hardened, bunkers against destruction; rather, the less expensive and less intensive modifications it proposed merely slanted a building toward fallout shelter.

A campaign to publicize the new jargon and approach was launched in the OCD *Annual Report:* "Breakthrough in design techniques and procedures . . . It is anticipated that the concept of slanting, as it is introduced to architects and engineers, will become an important basis for developing fallout shelter space in future construction."[30] As James Roembke, director of the OCD's Architects and Engineers Services Division, wrote to one design professor, getting students and building professionals to understand and embrace slanting would be "a major contribution to the defense posture."[31] However, the word *slanting* never really caught on. Government publications employed it from 1963 to 1968 and occasionally thereafter, though it does not appear even in the competitions and awards booklets cosponsored by the OCD and AIA. One cannot help but reflect on the OCD's unfortunate word choice. Should architects strive for slanted structures? A roof may slant, but should the entire building? A slanted building seems more appropriately the symptom of a nuclear blast, rather than the antidote to its residual fallout.[32] Perhaps more damaging to the reputation of the fallout shelter program is that according to *Webster's,* to *slant* means to "be influenced by a subjective point of view, bias, personal feeling or inclination"; or, in journalism, "to distort (information) by rendering it unfaithfully or incompletely." Perhaps the lexical choice signals

some level of subconscious self-knowledge, a reflection of the OCD's desire to suppress any discussion of nuclear weapons effects other than fallout. Certainly, the failed attempt at coinage is indicative of the OCD's continuing difficulties in getting across its message of dual-purpose, above-ground shelter.

WALLS OF STONE AND WALLS OF GLASS

What the OCD hoped to suppress—or, more appropriately, *bury*—in its promotion of fallout shelter was the image and conception of a bunker, whether above- or belowground. However, the easy (if inelegant) solution offered by the bunker continued to come to the surface. Many Americans, including some architects and civil defense planners, continued to believe that bunkers were necessary for Cold War civil defense. Even more troubling, relative to fallout shelter design, was that American architects in the early 1960s increasingly adopted an aesthetic of solid, bunkerlike forms in rough concrete. In fact, a struggle between the glass box and the solid mass within the discourse of architectural modernism would prove a minefield for civil defense officials. The OCD had to fight for fallout shelter, and its meanings, on multiple fronts.

On the architectural front, some OCD publications explicitly acknowledged the dilemma. For instance, in one 1962 professional guide for the design of fallout shelter in high-rise apartments and offices—prepared by Eberle M. Smith Associates and reviewed by the AIA—the authors waxed hopeful: "Some exceptional new buildings have virtually no windows at all. If this should become a trend, it would simplify the problems of planning shelter."[33] Evidently attuned to the latest discussions in the architecture literature, these designers looked to recent examples from the architects Le Corbusier or Louis Kahn, whose buildings in this period expressed a new solidity in materials and massing, and a new parsimony in fenestration. The glass box was being replaced by the concrete box, as several lectures at the 1962 AIA convention heralded. "We're sick of the glass box," said one architect at the convention, asked for his take on the winner of the Boston City Hall competition, unveiled only two weeks before. Houston architect William Caudill entertainingly explained the solidity of the new bunker architecture as a reaction to the previous, well-established forms of the modern movement: "When men lived in caves they poked holes in them to let air in and smoke out. The holes got bigger and bigger. Now the holes have eaten up the box."[34] The new

approach to modern architecture would reinstate the solid, protective walls of the box.

In the meantime, though, the fallout shelter program had to contend with the forms of International Style, glass-box modernism regnant since the previous decade. Civil defense planners strove to be realistic. The authors of the high-rise study recognized that the "obvious expedient of increasing the mass of the exterior walls and reducing the area of windows, which would improve both the shielding and air-conditioning aspects of the building, is not likely to be adopted as long as it is inconsistent with what most tenants like and expect." It was more important that the OCD convince building owners to incorporate at least some shelter, even if they declined to make bunkers out of their schools and office buildings. In this, the OCD claimed that shelter would enhance a property's "ability to attract desirable tenants" and a business's "to obtain competent clerical help." Nevertheless, the provision of fallout shelter in contemporary high-rises posed a significant problem for civil defense planners, as well as for architects and building owners:

> In most office buildings of the twenties, about 25% of the peripheral wall area was glass, but the amount has increased in recent years up to 75% for the glassiest of the New York skyscrapers. The combination of curtain wall and large glass areas renders the exterior walls of many . . . buildings practically valueless as shielding against fallout radiation. Scarcely better are the light panel walls which are generally preferred for interior partitions . . . Usually, only the permanent interior partitions around stairs, shafts, toilet rooms and other elements of the core are capable of giving a useful degree of radiation shielding.[35]

Regrettably, even if a skyscraper's service core had an adequate Protection Factor, it was unlikely to have enough capacity to accommodate all the building's occupants. If only those glass walls could be replaced by denser cladding.

The criticism of current architectural trends implicit in the OCD's program caused building materials manufacturers to cry "foul." The OCD was not unaware of potential protests from manufacturers of building materials and systems. Federal civil defense agencies always attempted to appear balanced in their support of competing materials and methods to achieve shelter. In 1960, the Office of Civil and Defense Mobilization (OCDM) had released a series of booklets illustrating family fallout shelter designs conceived by competing national associations of materials

manufacturers. Concrete and steel may have characterized the most prevalent proposals for Cold War construction, but the OCDM even gave a nod to the lumber industry. One absurd design specified wood construction entirely from two-by-four laminations (Figure 5.3): roof and floor would be two-by-fours on edge; walls were envisioned as two-by-fours on end, continuously spiked together in homage to the frontier stockade construction practiced by those archetypal early Americans in response to threatening Indians. Since wood provides relatively little protection from fallout (not to mention thermal radiation), the booklet explained that wood shelters would "gain protection . . . by the mass of earth that covers them."[36] That is, it specified two to three feet of earth, which would have raised all sorts of problems with moisture and pests. When used underground, other materials like concrete and steel were not immune to these problems either.

The OCD continued a tradition of industry review for its early shelter design literature. For instance, in 1963 it had the Structural Clay

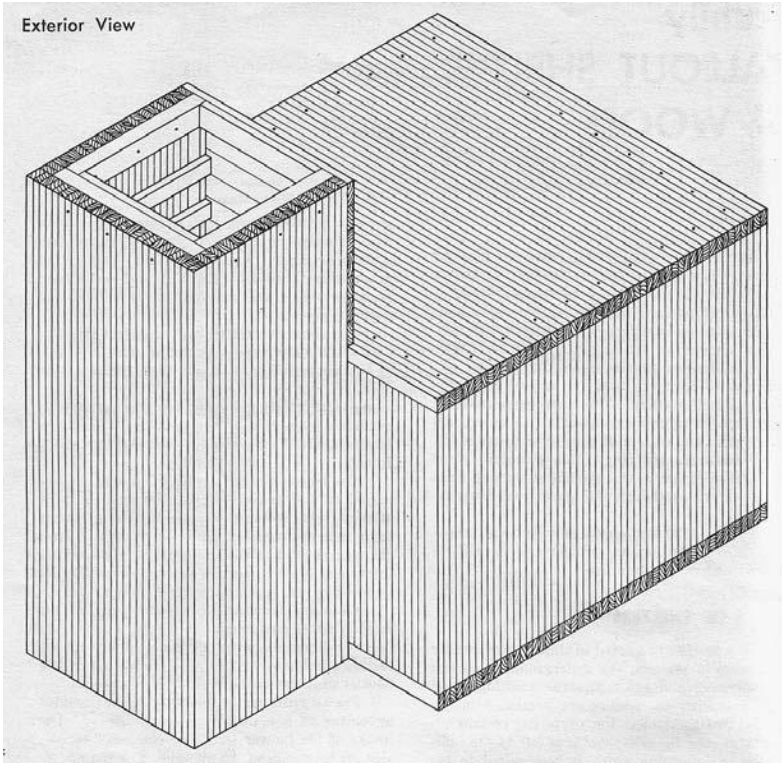


FIGURE 5.3. Fallout shelter of wood laminations. From Office of Civil and Defense Mobilization, *Family Fallout Shelters of Wood* (1960).

Products Institute vet the plans of a model school in brick (Figure 5.4). This was the OCD's first publication in a "design series utilizing an aboveground structure of more conventional design, i.e., one with windows."[37] The form of this particular school harked back to the engineering case study for Hampshire High School, the modernist glass curtain wall building with fallout shelter discussed earlier. Here, however, the crisp walls of glass were replaced by uninterrupted planes of brick with minimal fenestration. This purportedly conventional structure, if built, would have had significantly less glazing than Hampshire High School, which already had proved capable of providing the required radiation shielding. In fact, the protective aesthetic of this brick enclosure was belied by the location of the shelter space in the core "activity room": with a core shelter,

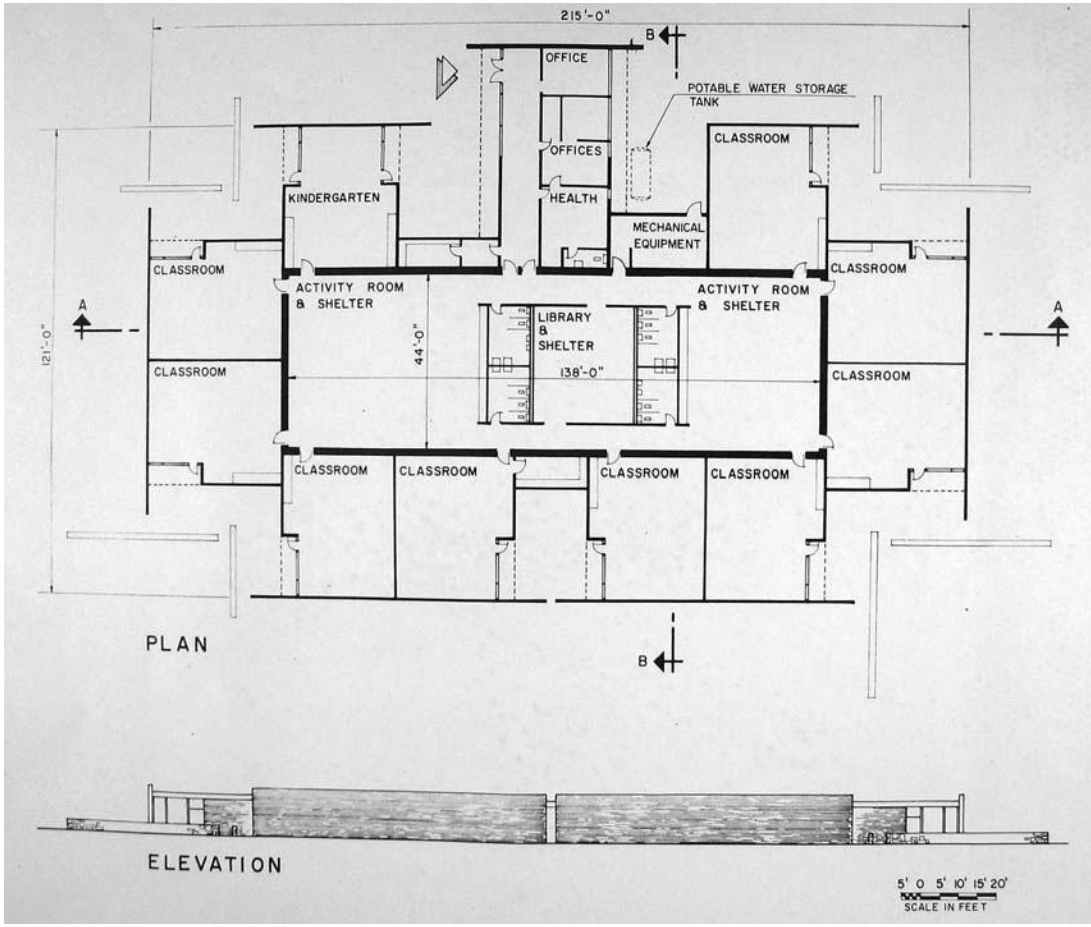


FIGURE 5.4. A school fallout shelter denoted by the thicker wall of the core, in plan view. Classrooms are arranged around the core. From "Aboveground Clay Brick Masonry Core Shelter," from an Office of Civil Defense report (draft), RG 397; National Archives, College Park, Maryland.

the classrooms *could have been* glass boxes if the architect and material specifier so desired. The OCD's message that fallout shelter does not necessitate the reduction of fenestration was here undermined by its need to placate the manufacturers of dense materials.

When civil defense was an unfocused program of ad hoc research and development, with intermittent efforts at planning and promotion, manufacturers and their associations could flirt with the discourse on their own terms, such as by making specific claims in an advertisement about the protective qualities of their product (as in Figure 1.8). There was no legible protest even in 1958 when a review of the fallout shelter strategy published in *Architectural Forum* singled out "big glass areas" and "light curtain-wall paneling" in its conclusion that "many modern materials and constructions are hazardous in this explosive age."[38] But when the new OCD gained the authority to push a National Fallout Shelter Program, which included the potential to lead construction specifiers toward particular modes of protection, this prompted some elements of the building industry to resist forcefully. Manufacturers of less protective building components now viewed fallout shelter policy as representing government encroachment in the marketplace, a potential threat to their bottom lines. The explosion of the fallout shelter debate in the early 1960s spurred some of these producers to action.

To defend its market territory, the glass producer Libbey-Owens-Ford launched a preemptive strike in spring 1962 (Figure 5.5). Its ad campaign, titled "Architecture and the Open World," paired a luminous photograph of a modernist glass house with several paragraphs of melodramatic text separated by bold headings:

> **History is built of straw and mud.** Of brick and stone. Wood and metal. And of *glass*. . . . For man's architecture has always been his attitude. An expression of his heritage and his hopes. His fears and his faith.
>
> **A place to hide** Often his home, whether castle or hovel, was first and foremost a place to hide in. The drawbridge, the lookout towers, the dwellings hacked out of high cliffs—these were things built not for a man's better living but so that his life would not be abruptly ended. Even now, in 1962, much of the world is still in hiding. Behind closed doors, shuttered windows. Behind walls of stone and fear and ignorance.
>
> **In America** How differently we live in America . . . the more strongly we feel about being free, the more clearly our architecture shows it. The more it turns to the one magic material that encloses without imprisoning. *Glass.*[39]

Architecture
and the
Open World
An "Open World" home in Moreland Hills, Ohio. Architects: Rowley, Payer, Huffman, Leithold of Cleveland, Ohio
History is built of straw and mud. Of brick and stone. Wood and metal. And of glass.
As you leaf through the pages of time, you will find each chapter headed by the kind of structure in which men lived, loved and died.
For man's architecture has always been his attitude. An expression of his heritage and his hopes. His fears and his faith.
A place to hide
Often his home, whether castle or hovel, was first and foremost a place to hide in.
The drawbridge, the lookout towers, the dwellings hacked out of high cliffs — these were things built not for a man's better living but so that his life would not be abruptly ended.
Even now, in 1962, much of the world is still in hiding. Behind closed doors, shuttered windows. Behind walls of stone and fear and ignorance.
In America
How differently we live in America. Here the shutters have come off, the walls have come down, and the love of liberty is expressed with eloquence everywhere. We live in freedom, and our houses show it. We work in freedom, and you can see it in our buildings. And the more strongly we feel about being free, the more clearly our architecture shows it. The more it turns to the one magic material that encloses without imprisoning. Glass.
Glass makes the difference
Homes that once were only as wide as their walls now seem as big as all outdoors. Schoolrooms that once seemed more like cells now have a cheerful, open feeling of freedom. And today, instead of a few items stacked in a store window, the whole store is on display. Banks look hospitable instead of hostile. Office buildings say "Come in" instead of "Keep out".
And inside, space seems much less encumbered than ever before. Light passes uninterrupted through translucent glass partitions. And big, wide ribbons of windows help keep the walls from closing in.
This is architecture that encloses without imprisoning... this is comfort without confinement. This is the world of picture windows, daylight walls, sliding glass doors, curtain walls, visual store fronts. The world of Thermopane® Insulating Glass, Parallel-O-Plate® Glass, Heat Absorbing Plate Glass, Parallel-O-Grey® Plate Glass, Tuf-flex® Tempered Plate.
This is the "Open World".
Libbey·Owens·Ford
Toledo 2, Ohio
LOF GLASS
THE QUALITY MARK TO LOOK FOR
60

FIGURE 5.5. Glass advertisement published in *AIA Journal,* April 1962.

This advertisement plays on a metaphor common in 1950s U.S. architectural discourse, in which the transparency of modernist glass walls parallels the transparency of American democracy. For example, this metaphor was used to justify the low-security glass facades and neighborly, open site plans of a series of mid-1950s U.S. embassies in cities such as Stockholm. Likewise, the metaphor extended to the glazed view-through lobbies of

Hilton Hotels built on the fronts of the Cold War in places like Istanbul and Berlin, and meant to represent the freedoms of democratic consumption.[40] For its part, Libbey-Owens-Ford argued that solid "walls of stone and fear and ignorance" were quintessentially un-American.

By the early 1960s, however, a modern architecture of glass curtain walls was increasingly coming to be seen as stereotypical of American business and government, both at home and abroad. At the same time, an aesthetic backlash among architects pointed to a rebirth of solids characterized by the extensive use of concrete for both structure and form. These shifting meanings of architectures and styles suggest that the OCD was walking a political and aesthetic tightrope in trying to promote fallout shelter. On the one hand, they could appeal to the avant-garde by advocating a more solid architecture; on the other hand, doing so would alienate the manufacturers, designers, politicians, and citizens who had come to associate an architecture of glass with a seemingly official and influential American identity. Could civil defense planners of the Kennedy-Johnson era somehow bridge the divide?

As an example of this dilemma, the OCD found itself at the center of a contemporary controversy over windowless schools. School administrators, educators, and architects noted that windowless school buildings could provide controlled interior environments better suited both to focused study (no distractions) and to the conservation of energy, which would save long-term operating costs compared to standard school construction. At the same time, since administrators "took a dim view of using school construction funds to provide fallout shelters in school buildings," proposals to "reduce glass areas" appeared to them a convenient way to make protection inherent to the structure they already were planning to build.[41] A 1962 OCD manual was in agreement: "One of the more revolutionary concepts in the school design of recent years has been that of the windowless school."[42] Of particular note to civil defense officials, one windowless school even had been built entirely underground.

Opposition to windowless schools soon mounted, however. Both the state of California and the National Council on Schoolhouse Construction opposed the windowless school, the latter association declaring in no uncertain terms that "shelter provisions are not compatible with educational requirements."[43] Meanwhile, building industry organizations, such as the Flat Glass Jobbers Association and the National Association of Architectural Metal Manufacturers (NAAMM) would do their best to maintain the primacy of the glass curtain wall. They particularly targeted

what appeared to be OCD-sanctioned designs. In its journal, *Architectural Metals,* NAAMM criticized a growing interest among civil defense officials and "nationally known architects and educators" in the possibilities of windowless schools. In attacking the windowless school concept, NAAMM pointed to the time-honored advantages of fenestration, citing a recent speech by the vice president-sales of Libbey-Owens-Ford: "Only in an 'open world' school can a child relax his mind . . . The vast, interesting and educational outside world lies before the eyes of every child in 'open world' schools, and progressive teachers have been taking advantage of this." We must resist the urge, NAAMM argued melodramatically, to return "our children to the cave-like environment which their forefathers abandoned hundreds of centuries ago."[44]

These protests suffuse the internal review of a proposed OCD publication illustrating a windowless blast-resistant school and community shelter (a level of protection greatly in excess of that required for fallout). Office of Civil Defense chief engineer James Roembke argued that the release of the publication at that time could seriously undermine the OCD's ability to convince NAAMM that "they should cease and desist in their vigorous promotional campaign against the inclusion of protective features in buildings." Instead of the OCD putting forward a bluntly bunker-like prototype, "careful promotional efforts will encourage slanting the design." Roembke must have argued convincingly, since the 1962 school manual cited earlier was the culmination of OCD interest in windowless buildings, which were object lessons in bunkerism. Even when built aboveground, a windowless school was effectively subterranean, cavelike. For Roembke, in fact, the most serious issue was that by promulgating these "illustrative examples of space allocations for basement or below-ground shelter," the OCD would contradict its own stated policy and raise questions whether it was truly "encouraging the inclusion of protective features in conventionally designed structures, not the construction of below-ground 'black boxes.'"[45] As evocative as it is in the context of the quotation, "black box" is actually an electronics term; Roembke may have been thinking of a "black body," which in physics is defined as "a hypothetical body that absorbs without reflection all of the electromagnetic radiation incident on its surface" *(Webster's).* While this would be a useful quality in a fallout shelter, both terms suggest buildings that sit mutely without reflecting the controversies of civil defense. To contain this bête noire—that is, the specter of a mute bunker, arising from the depths—would require the constant vigilance of the OCD and some significant aid from the AIA.

PRIZEWINNING PROTECTION: HYPOTHETICAL DESIGN COMPETITIONS

Where the AIA came to be most helpful to the OCD was in educating architects about fallout shelter design, and convincing them that it could be good design. The three fallout shelter design competitions run by the AIA during the first half of the 1960s were the institute's most significant contributions to the civil defense posture. The profession had long supported design competitions as a way to generate new approaches and to shore up the public status of architecture. In particular, "ideas competitions" have often been used by building materials manufacturers to showcase the use of their products, or by political bodies as ways to produce dialogue about future directions in development. In ideas competitions, architects submit designs for a hypothetical site and/or program, without the expectation of their designs being carried out. The idea for an architectural competition, which originated within the OCD, was brought to fruition during the first meetings of the Construction Industry Advisory Committee in late 1961 and early 1962. A competition would attract attention to, and encourage participation in, the fallout shelter program. The highly publicized and well-subscribed competition for the design of Boston City Hall, which was under way at exactly that moment, might have influenced the OCD's move in this direction.

The competition programs and illustrative booklets published by the OCD were intended as both educational and promotional materials. Cerlox binding allowed the books to lie flat so that perspectives and plans of the competition winners could spread across two pages, while two-color printing contributed to ease and pleasure of viewing (at the time, the architecture journals were exclusively grayscale and glue-bound). The agency's official statement on architectural design would be restated consistently throughout: if considered at the design stage, fallout shelter could be provided in conventional, aboveground construction without affecting the building's operation or appearance.

The OCD wanted to wash its hands of aesthetics, drawing in the AIA to arbitrate between the quantitative requirements of protective design and the qualitative aspects of conventional and beautiful, dual-purpose shelter space. Roembke and his colleagues responsible for developing the National Fallout Shelter Program were almost exclusively engineers, whether from military or civilian backgrounds. At the risk of perpetuating a stereotype about engineers, the OCD's concern for aesthetics was entirely strategic rather than artistic. When left to themselves, OCD engineers might

suggest some decorative concrete block (Cold War gingerbread) and a sprinkling of perennials to mask the bunkers behind them. One 1965 OCD publication listed "low cost techniques" for slanting buildings toward shelter; designers could take into account wall, floor, and roof construction, siting and earthwork, or aesthetics. In the latter category, the question is posed: "Has consideration been given to providing masonry screen walls, or planter boxes for esthetic value as well as increasing the mass for shielding purposes?"[46] To its credit, the OCD recognized that it could not sell slanting to architects, or to most of their clients, on such recommendations. The competitions would generate better design ideas.

In many respects, the concerns of the competitions mirrored those of Johnson's Great Society and the developing welfare state. The three competitions promoted public building types that were likely to be built in burgeoning residential suburbs where shelter deficits were common, and social welfare facilities were needed: a school, a shopping center, and a community library/recreation center. In the case of the shopping center, for instance, the OCD hoped to take advantage of the large catchment areas of suburban shopping malls and the intention of their developers that they would become the new town centers of the postwar United States. A 1962 article in the *AIA Journal,* cowritten by an architect and a developer, had argued that shopping centers were the logical place for mass, community shelters because much research went into site selection. Malls were "the center of gravity" for a wide public and easy to get to; they would keep "the people in their neighborhood . . . [for] shelter loading without affecting the remainder of the city"; and emergency provisions and medicines could be "guaranteed as a normal operation of supply of daily goods."[47] In addition to shelter, concerns about first aid and mass feeding were paramount to civil defense planning for the welfare of U.S. citizens.

Further, the concern for "community," reiterated often in these competitions (and in other OCD literature of the period), echoes the rhetoric of the Great Society. As the program for the third competition noted:

> In selecting a community educational and recreational center as the subject, the OCD was mindful of the goals of other national programs. Many of these emphasize education for both youth and adults, retraining for increased economic opportunity, recreation and physical fitness, and . . . improvements to total environment.[48]

While this competition was for an actual community center, a little sleight of hand was necessary on the cover of the second program: nothing to do

with shopping occurs in the title, *National Community Fallout Shelter Design Competition.*

Regardless of civil defense debates within its ranks, early in 1962 the AIA agreed to conduct the first competition on behalf of the OCD and to edit the booklet illustrating the winners. The institute had never before become involved in a competition, or with a government agency, to this extent. Even to enter into this first OCD contract required board approval and vetting by the AIA's lawyer and treasurer. Even so, numerous problems with financial and temporal budgeting, especially during the first competition, would point up the institute's inexperience with this type of activity.

The AIA subcontracted Washington, D.C., architect A. Stanley McGaughan to be architectural adviser to the first competition; he would perform this service for all three competitions, and for the subsequent awards programs for buildings constructed with fallout shelter. Meanwhile, McGaughan also landed contracts for assembling and editing some of the engineering case studies sponsored by the OCD. McGaughan was no stranger to government contracting, having a long résumé that included employment as an architect with New Deal administrations working on model communities, as well as wartime and postwar housing. In private practice with McGaughan & Johnson after 1947, he performed design work for the U.S. Air Force and the Army Corps of Engineers, and was a consultant to the National Security Resources Board during the Korean War, the latter organization a precursor to the FCDA. Meanwhile, to help lubricate the relationship between the two organizations, the AIA managed to install one of their own on the staff of the OCD. Robert Berne, who had worked for the Army Corps of Engineers during World War II, was in charge of the AIA's Building Information Service before becoming chief architect to the OCD. He was the only architect among the OCD's staff of engineers. These brief biographies demonstrate that most of the architects who assumed leadership roles in civil defense had both wartime experience and histories of service to the AIA.[49] Drawing on these professional experiences, they used civil defense work to augment the status of architects as vital contributors to national security.

That the first competition would be for a school was a foregone conclusion. Schools had been the focus of fallout shelter discussions for several years. As McGaughan explained in the *Awards* booklet, schools were publicly owned community facilities "with many characteristics appropriate to fallout protection requirements." In addition to being

substantial buildings, schools were staffed by "competent public employees trained in leadership"; they had facilities for mass feeding; on a daily basis they hosted more than 25 percent of the total population; and they were conveniently located in residential areas, especially new suburbs, that had shelter deficits according to the survey and community shelter planning process.[50] For all these reasons, school administrators were popular targets for civil defense persuasion. More broadly, as the children of the postwar baby boom grew up, U.S. schools were a touch point for many political issues, from civil rights to civil defense. They would be key institutions in President Johnson's vision of the Great Society.

In addition, much civil defense research on schools already was complete, including many of the engineering case studies and other projects. One representative example of this research was a design published in 1961 for a hypothetical, aboveground, dual-purpose school fallout shelter. Caudill Rowlett Scott (CRS), which specialized in the design of educational facilities, produced the plans in partnership with building systems manufacturer Convair. Bill Caudill, referring to the windowless trend, told the editor of the *AIA Journal* that CRS had participated in the project because "we have quams *[sic]* about sending our children to school in a hole."[51] The fact that Caudill, with his qualms, was appointed to the jury of the school competition indicates that the OCD by 1962 was committed to promoting the design of aboveground fallout shelter in regular construction. The addition of a designer, Berne, to the OCD staff also points in this direction. Not coincidentally, Caudill also had worked for the Army Corps of Engineers designing air force bases and POW camps during World War II; he and Berne likely knew each other, since they both worked for the corps in Nebraska between 1942 and 1944.

When the results of the first competition were published, statements by McGaughan, the jury, and the assistant secretary of defense all boasted that the winning designs were so successful that it "would be difficult for the layman to recognize these schools as shelters."[52] However, laypersons may have recognized the protective and paranoid principles that seem to have guided the design choices of entrants. Most of the entries that received awards betray bunkerlike characteristics, indicating the turn away from a glassy, open world architecture toward more solid forms. For example, many of the entries feature massive bearing walls, enormous earth berms, and thick slab roofs as barrier shielding. In the representative grand prize–winning design by Ellery C. Green of Tucson, a professor at the University of Arizona, the shelter area is surrounded by

an arrangement of almost windowless classroom blocks, which are buffered with giant planters and revetments (Figures 5.6–5.8). The monolithic planters are softened in the perspective drawing by lush gardens that spill over their sides. Regardless, the broad, horizontal concrete planes emphasize the building's attachment to the protective earthworks, and the representations conjure up the blast slabs and earthworks of a World War II front.

The martial rectilinearity of many entries was relieved by several circular submissions, a morphological choice the jury deemed "arbitrary." One round award winner is composed of wedge-shaped classrooms with baffled entrances radiating from a central core of services, administration, and assembly areas. The core rises above the classroom roofs to accommodate mechanical space in an attic. The overall effect is that of a gun emplacement and turret, commanding from under its thick slab roofs a 360-degree field of fire (Figure 5.9). From this panoptic position, the range of vision is encumbered only by the slimmest of possible trees planted atop an earth berm that embraces the curvature of the structure, providing a first line of defense. Two circular outbuildings seem to be provided for storing

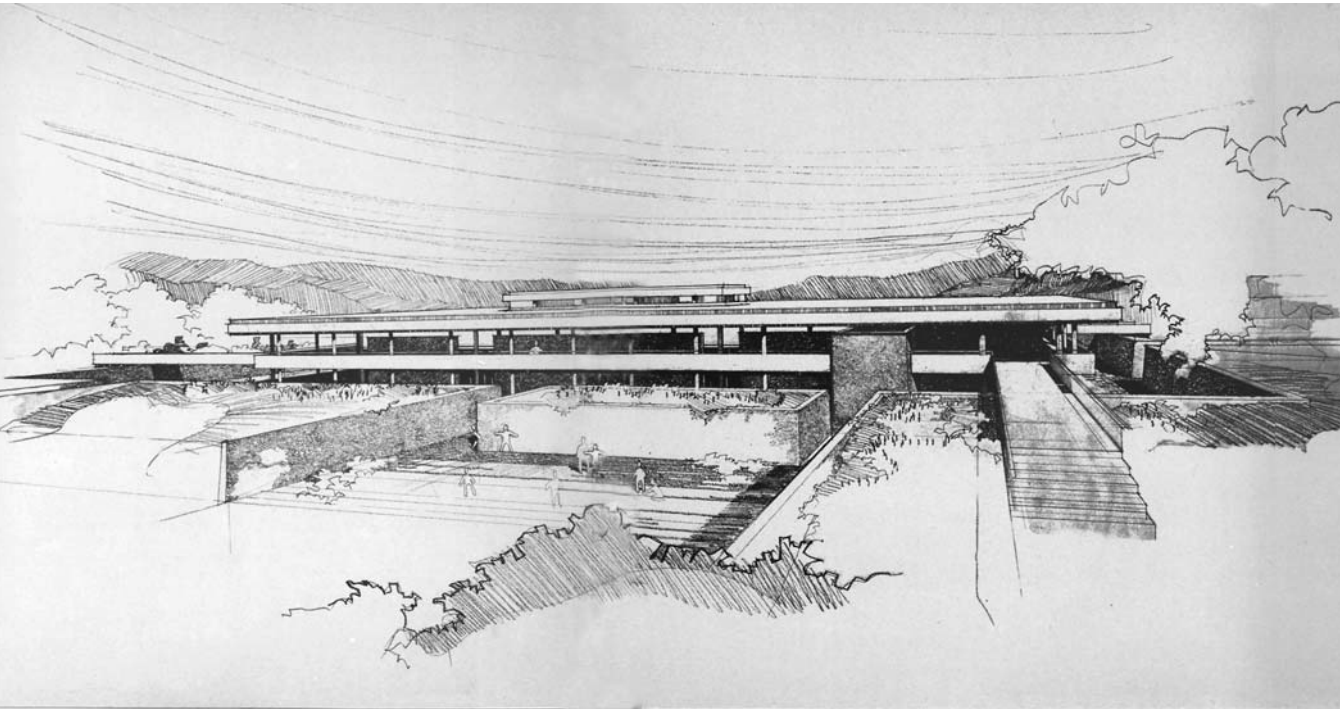


FIGURE 5.6. Perspective of winning design by Ellery C. Green, architect. From *National School Fallout Shelter Design Competition Awards*.

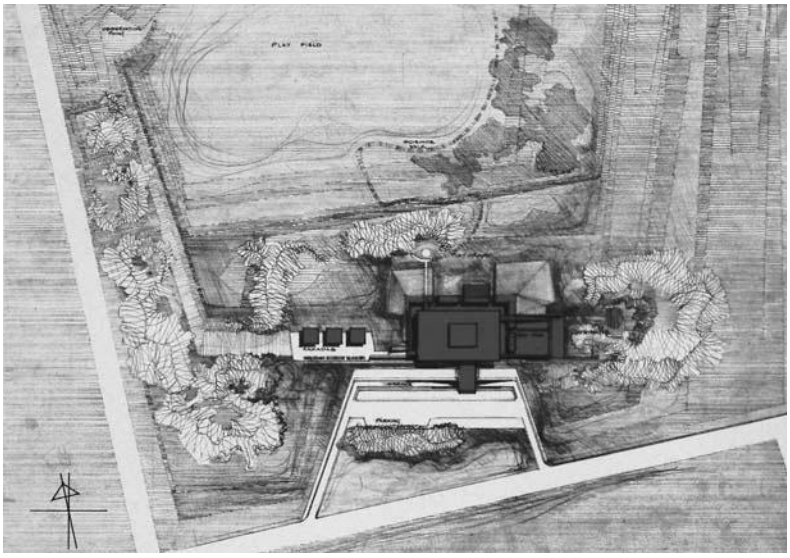
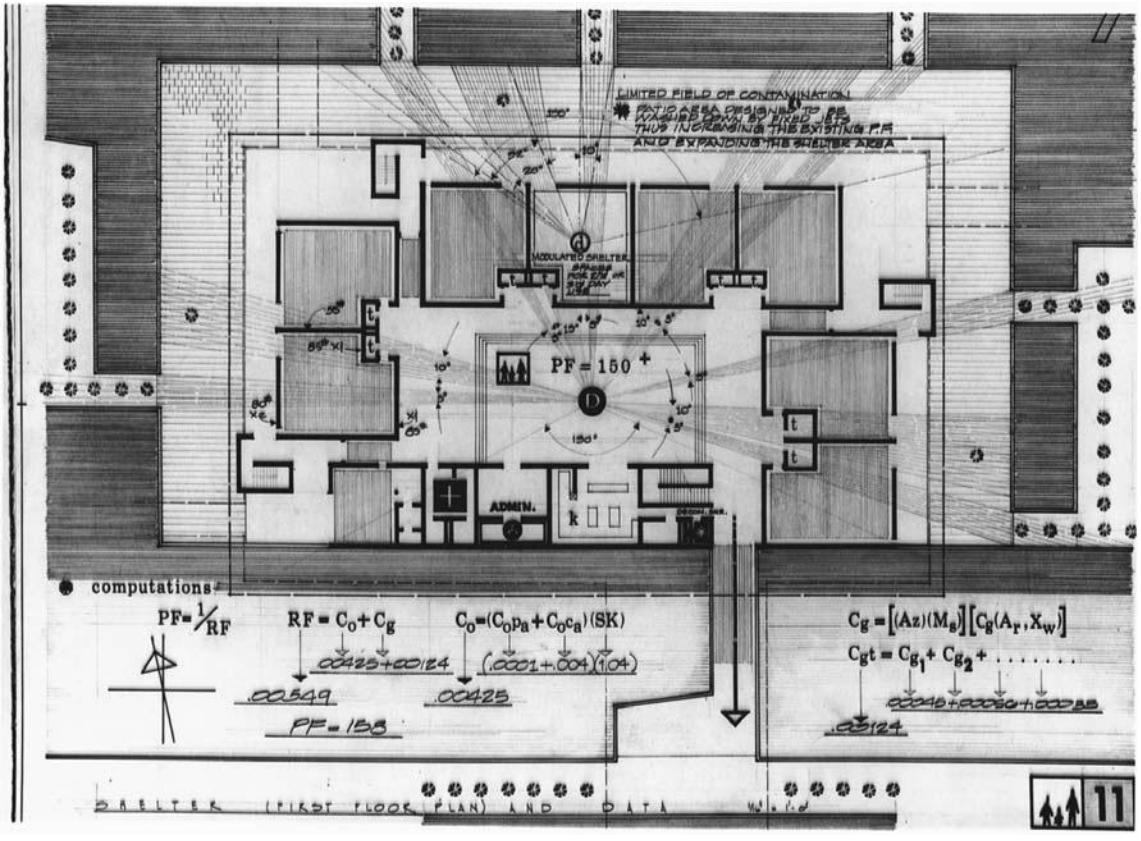


FIGURE 5.7. Site plan of winning design. From *National School Fallout Shelter Design Competition Awards.*

FIGURE 5.8. Plan and calculations of shelter area in winning design of the national school fallout shelter design competition. The calculations were removed prior to publication in the booklet. Photo no. 30-S-16; RG 397-MA; National Archives, College Park, Maryland.



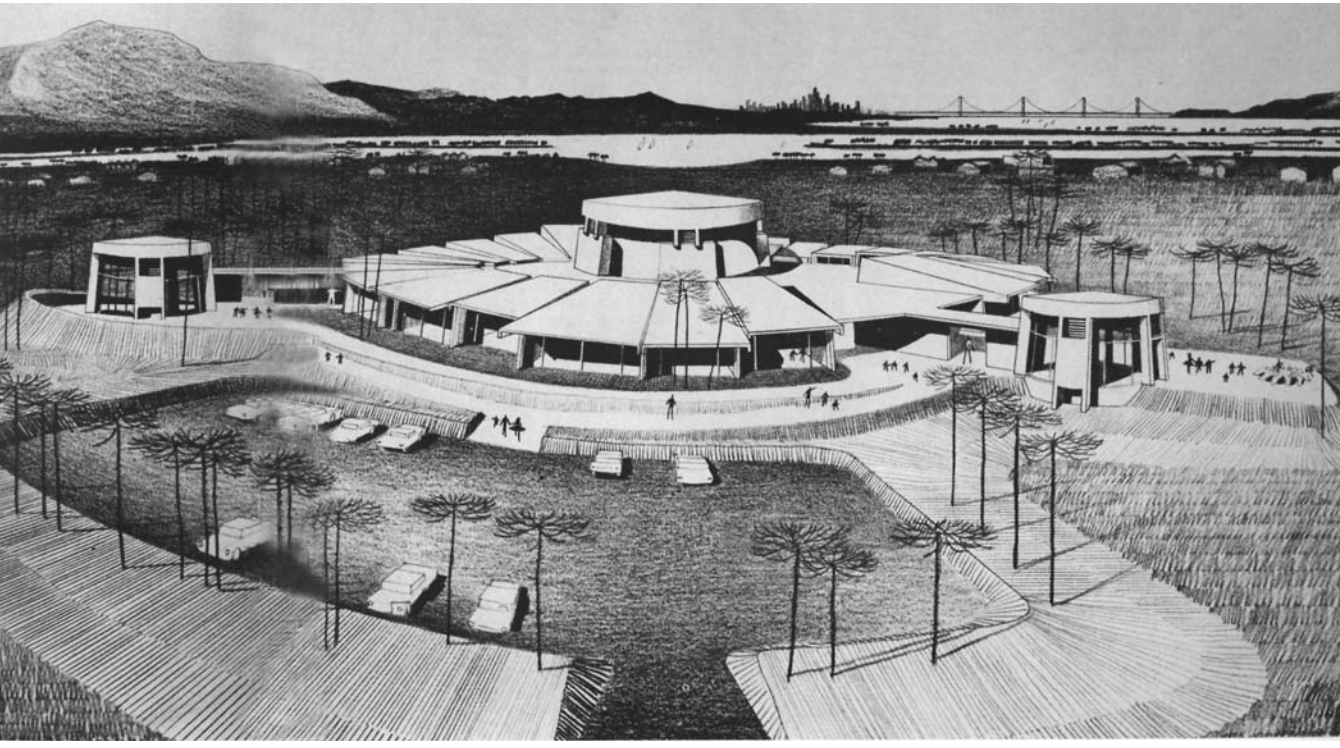


FIGURE 5.9. Perspective of a circular award winner. From *National School Fallout Shelter Design Competition Awards.*

ordnance, though they are meant as the school's library and kindergarten. In retrospect, the circular plans seem to be projections of their authors' paranoia, alternately representing craters and targets—or, the concentric rings of destruction found on civil defense maps of hypothetical attack scenarios (Figure 5.10).

While the premiated designs in this and the following competitions ran the gamut from Prairie School organicism to Kahnian pavilions to corporate modernism, the prevalent approach was a bunker architecture. One outwardly modernist design sported swooping rooflines over fully glazed, aboveground volumes. Although the design departed from a bunker aesthetic at ground level, below the surface a complex arrangement of layers, volumes, and floor plates, all in exposed concrete, was typical of an emerging bunker architecture. In this projected school, a complex concrete skylight, intricate in section, provided barrier and geometric shielding while still letting natural light into the subterranean shelter and classrooms (Figure 5.11). In contrast, the most extreme example of bunkerism in the first competition was a regional first prize winner, which the booklet described as "somewhat massive and imposing" but "very much in character with

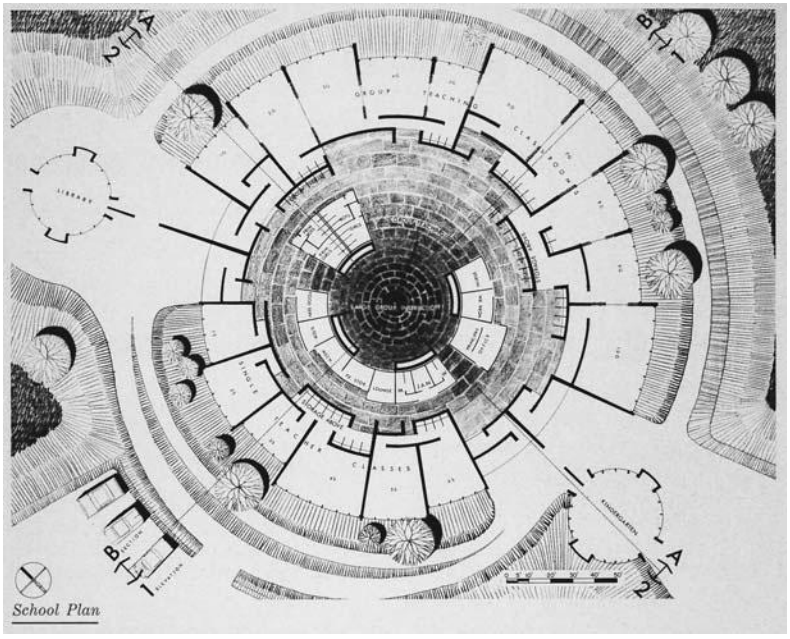
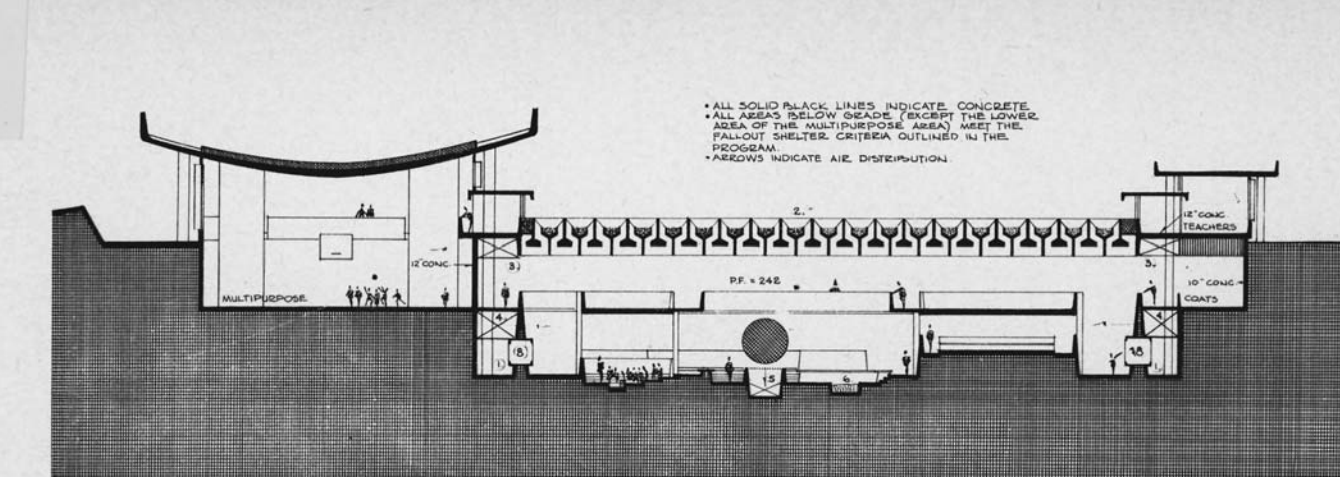


FIGURE 5.10. Plan of the circular award winner. Note the baffle walls at classroom entrances, blocking both radiation and hallway clamor. From *National School Fallout Shelter Design Competition Awards.*

[its] underground concept." To be precise, it was only semiburied. In this school, earth is raked up and over unapologetically bunkerlike pavilions with thick slab roofs and exposed concrete walls that tilt inwards as if braced for attack (Figure 5.12). The children populating the perspective, two of them holding hands against a blank backdrop of rough concrete, seem alien to the forbidding environment depicted.

FIGURE 5.11. Another regional first-prize winner from *National School Fallout Shelter Design Competition Awards.* Glazed pavilions flank the subterranean shelter space/common area and classrooms.


• ALL SOLID BLACK LINES INDICATE CONCRETE.
• ALL AREAS BELOW GRADE (EXCEPT THE LOWER AREA OF THE MULTIPURPOSE AREA) MEET THE FALLOUT SHELTER CRITERIA OUTLINED IN THE PROGRAM.
• ARROWS INDICATE AIR DISTRIBUTION
MULTIPURPOSE
12" CONC
P.F. = 242
12" CONC TEACHERS
10" CONC COATS

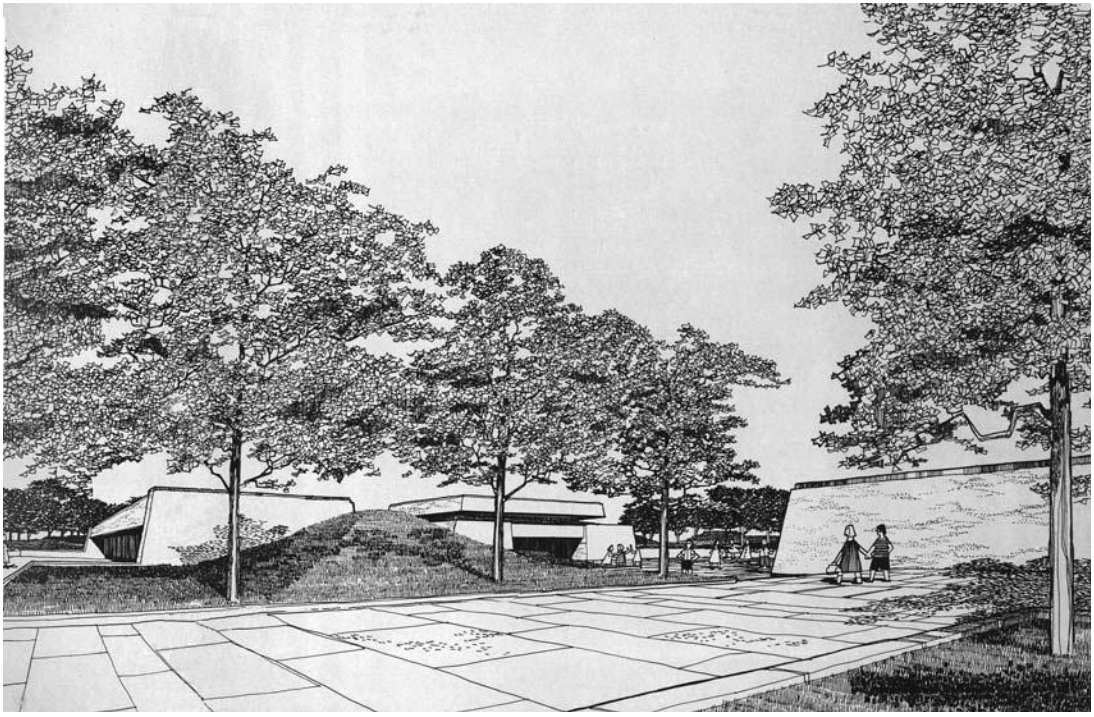


FIGURE 5.12. A regional first-prize winner that is an essay in bunker architecture. From *National School Fallout Shelter Design Competition Awards.*

Despite the bunker architecture that seems to have belied its public relations goal of promoting protection in ordinary buildings, the OCD was pleased with the results of the National School Fallout Shelter Competition. This was confirmed in a letter to the AIA from the assistant secretary of defense, commending the "organization and its members for the part they played in this important undertaking."[53] The upbeat hyperbole of this letter, or of the awards booklet itself, was not necessarily matched by all the participants. For instance, the report of the jury concluded cautiously:

> A greater understanding of the concept of a fallout shelter, and what it is, should result from this competition, for here is evidence that it need not be a massive, enclosed box. Perhaps no *great* architecture has come from the competition, but certainly there is considerable good architecture.[54]

Good design was achieved, if not great; but great design might not have made adequate shelter. Good design required a series of compromises, from the ideological to the material. What might seem anathema to some architects was the very goal of architecture for civil defense. Since OCD

policy did not permit it to solicit proposals, it confidentially requested the AIA to propose a second competition.[55]

Contrary to the OCD's interest in subtlety, the second and third competitions resulted in designs even more bunkerlike than those of the school awards. In the grand prize winner of the shopping center competition, only the deeply shaded entrances are allowed to pierce the blank exterior walls (Figure 5.13). Since the windowless, climate-controlled retail space was achieving currency in this period, the solid forms of a bunker architecture may have seemed particularly appropriate to shopping center design. But the jury for that competition—which was the most opinionated of the fallout shelter juries—complained several times about the excessively "medieval" and "forbidding" nature of the designs they picked as award winners. One shopping center design was the target of criticism because it possessed "the spirit of a bombproof shelter," rather than the subtlety of a fallout shelter. Regarding another, similarly bunkerlike design, the jury wondered whether potential shoppers and shelterees would survive "the severity of the facades" (Figure 5.14). Although the OCD continued to be pleased with the results of the competitions, this jury was pointing up the ongoing disconnect between OCD intentions of attractive, aboveground fallout shelter and the proliferation of forbidding designs that looked more like bomb shelters.

Finally, in the third competition, for a community center, bunker imagery again pervaded the designs. One of the winners presented a collection of three low-slung, concrete monoliths with deep overhangs, arranged around a raised, open quadrangle; by virtue of the overhangs, fallout

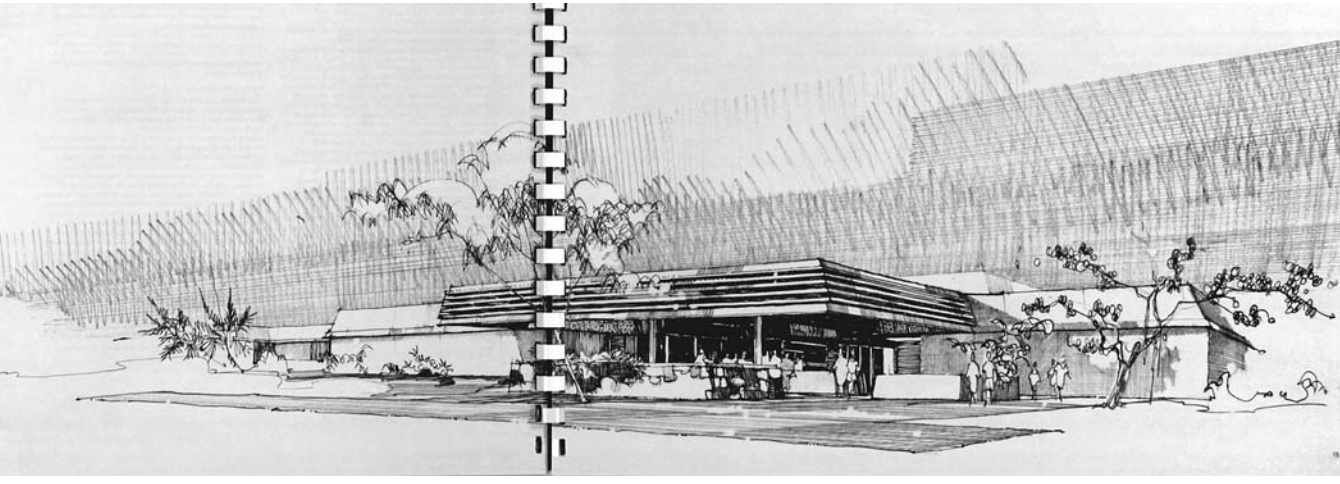


FIGURE 5.13. First-prize-winning shopping center. From Office of Civil Defense, *National Community Fallout Shelter Design Competition Awards* (Washington, D.C.: Department of Defense, 1965).

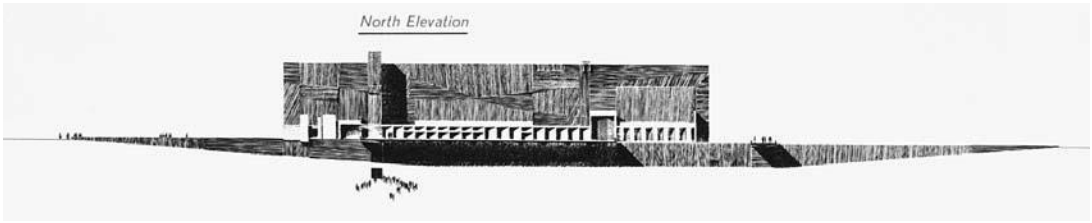


FIGURE 5.14. Award-winning shopping center in patterned rough concrete, with deeply shaded louvers at ground level. From *National Community Fallout Shelter Design Competition Awards.*

shelter was available with an outdoor view of the plaza (Figures 5.15 and 5.16). An ominous watchtower glowers over this public space, though. In elevation, this design's monumental stairs, protective earth berms, and uninterrupted planes of poured and precast concrete seem inappropriate to the neighborly intentions of the program. The tendency toward imposing forms in the three competitions conformed to the new aesthetic of solids dominating the architecture of many public buildings then under construction. In fact, the fallout shelter competitions, contrary to their intentions, both reflected and contributed to the ascendancy of a bunker architecture. Regardless, by the end of this final competition, a self-satisfied McGaughan could conclude that not only was fallout shelter established as "a new problem in environmental design" but it was "shown as essentially an architectural art."[56]

CIVIL DEFENSE CHARRETTES: PERFORMING ARCHITECTURAL EXPERTISE

In addition to the competitions, two major charrettes for the design of protective structures were held in 1963–64, and published as heavily illustrated volumes by the OCD. The first of these events was hosted by Rice

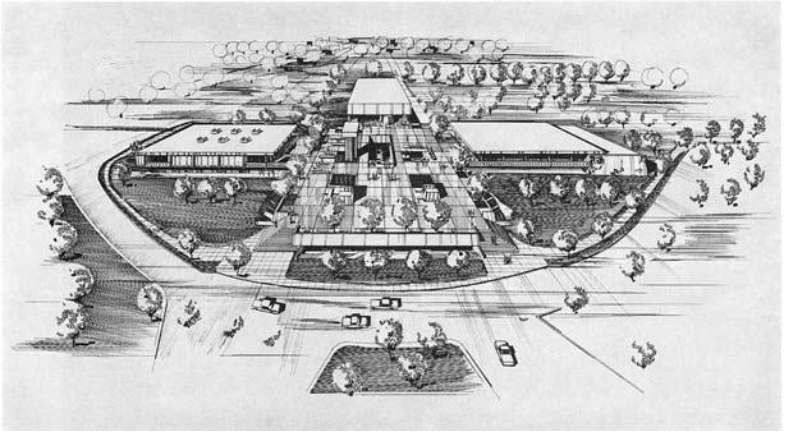


FIGURE 5.15. Perspective of award-winning community center complex. From Office of Civil Defense, *National Fallout Shelter Design Competition, Community Center: Awards* (Washington, D.C.: Department of Defense, 1967). Collection of Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal.

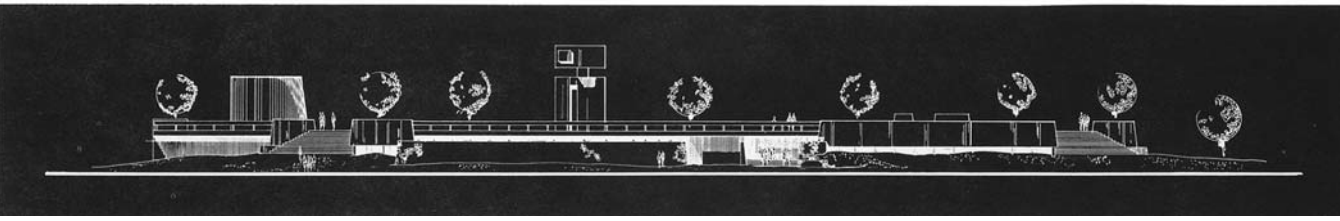


FIGURE 5.16. Elevation of award winner shown in Figure 5.15. From *National Fallout Shelter Design Competition, Community Center: Awards.* Collection of Centre Canadien d'Architecture/ Canadian Centre for Architecture, Montreal.

University and was directed by faculty member Bill N. Lacy, who also edited the associated OCD publication, *Industrial Architecture.* Lacy was the protégé of Bill Caudill. Having worked for CRS, he then joined Caudill at Rice, where Caudill had been imported to chair the architecture school during the modernization of its curriculum. This Rice University charrette reflected the long-term interest of Caudill and his firm in architectural research, as well as the school's aspiration to train professionals to function in the context of a modern "industrial society" where, in particular, the "threat of devastation by nuclear force is an offspring of our technology."[57] That is, essential to the education of the modern architect was the ability to design shelter from modernity's excess. The second charrette was held at the University of Kentucky and combined the practical and symbolic design of city halls with the provision of space for the continuity of government during crisis situations, such as natural disaster or nuclear attack. This prestigious event was inaugurated with a formal dinner and speeches by the governors of Kentucky and Alaska, the latter state having recently witnessed a massive earthquake that emphasized the need for crisis management. The charrette and its publication were directed and edited by John Hill, who had contracted the AIA's building code research.

The two charrettes followed similar formats. Established architects from around the United States arrived at the host institution for an intensive seven- to ten-day exercise, during which they led a team of students designing in response to a detailed, hypothetical program. Teams in both charrettes presented preliminary ideas to the entire group and then made formal presentations of final drawings and models in a public forum. The architects and students bunked and ate together for the duration, building team spirit and perhaps modeling an emergency stay in a fallout shelter. The charrette programs were written by their directors in consultation with OCD and other shelter experts. Each team was given a site based on conditions in a specific geographic region and architectural requirements that were variations on the overall theme of the charrette.

Unlike the competitions, both charrettes were explicit about the practicality (and seeming political neutrality) of designing protection from the natural disasters native to their assigned regions, though nuclear attack remained the central focus. As Lacy wrote in the conclusion to *Industrial Architecture,* American architects must understand fallout shelter design "just as architects in western seaboard states must have knowledge in designing for protection against earthquakes, even though they are unsympathetic to such acts of destruction."[58] The booklets stressed that the participants and sponsors all had something to gain from this exchange of ideas: the OCD received and disseminated solutions to the challenges of slanting; academics got prestige, funding, and publications; students found experience working with prominent architects and approaching a difficult design problem; visiting architects enjoyed "a new office routine" and the opportunity to serve both as student mentors and as role models to colleagues considering civil defense. Overall, the charrettes would contribute to "professional growth . . . and to the defense of the nation."[59]

In the competitions, and in other OCD publications, the relatively unknown award winners and designers were named, but readers were not given any information about them. What distinguished the charrettes was that the visiting architects were represented biographically as exemplary professionals and personalities. While expressing individual characteristics, each conformed to the allegorical role of "architect" in the OCD's morality plays. That is, participants performed their professionalism as a lesson for each other, for the students, and for their colleagues around the country who viewed the booklets and saw them addressing a design problem of national import. These publications are filled with images of men at work: jackets off, sleeves rolled up on crisp white shirts, cigarettes dangling or pencils at the ready, as they pore over plans and point at models (Figure 5.17). The photos reveal architects in their natural habitat, demonstrating that the incorporation of fallout shelter in buildings was not a radical departure from their professional duties. Fallout shelter was not "anti-architecture," as suggested by the dissenters against the AIA in 1962. Rather, protective design was inherent to the role of architects in society, and the participants in the charrettes modeled the behaviors that the AIA and OCD desired to inculcate among all American architects.

These publications also invited readers to identify personally with the participants. Biographical sketches of the team leaders listed education, employment with prominent firms, building type specialties, and awards received, alongside personal characteristics and approaches to

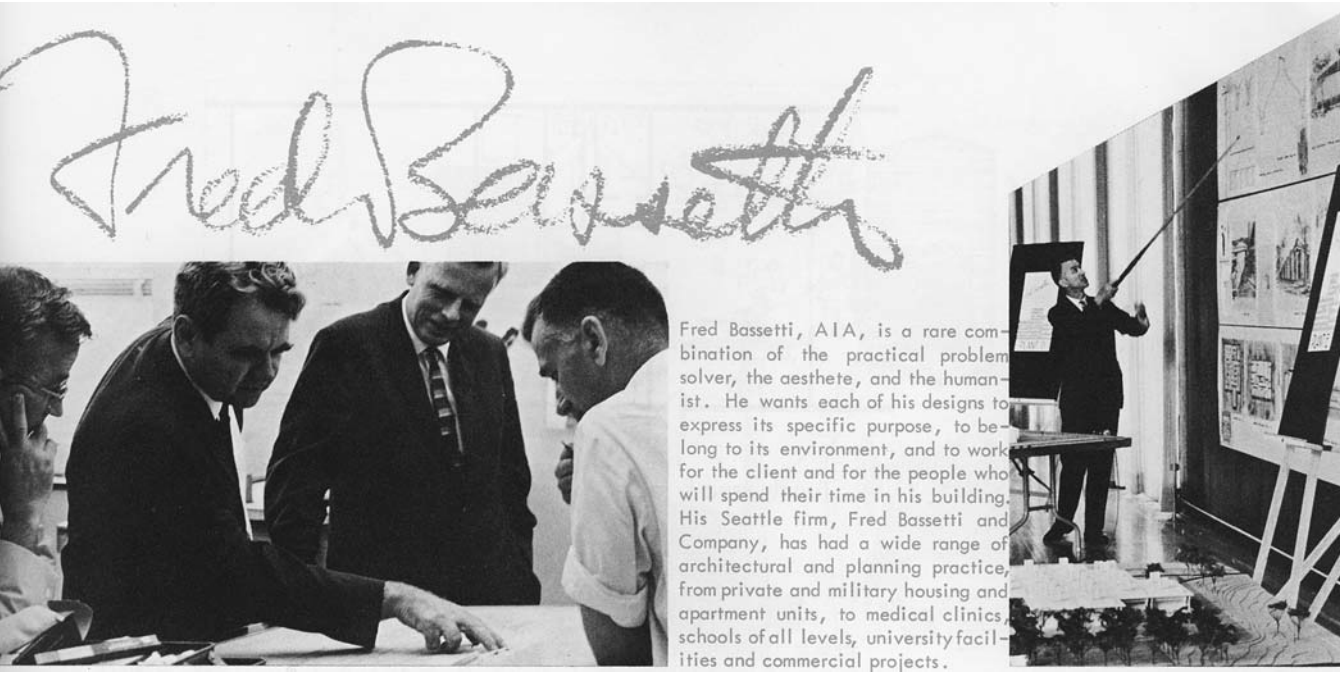

Fred Bassetti
Fred Bassetti, AIA, is a rare combination of the practical problem solver, the aesthete, and the humanist. He wants each of his designs to express its specific purpose, to belong to its environment, and to work for the client and for the people who will spend their time in his building. His Seattle firm, Fred Bassetti and Company, has had a wide range of architectural and planning practice, from private and military housing and apartment units, to medical clinics, schools of all levels, university facilities and commercial projects.

FIGURE 5.17. A fallout shelter design charrette at Rice University: *(left)* William Caudill points to a plan as Fred Bassetti, in short sleeves, looks on. *(right)* Bassetti uses a pointer to present his design. This fifty-six-page publication boasted no fewer than forty-three similar photographs of architects at work. From Office of Civil Defense, *Industrial Architecture: Fallout Shelters* (Washington, D.C.: Government Printing Office, [1964]).

design that humanize the visiting architects. The booklet *Industrial Architecture* assumed a heroic tone in its sketches of the five team leaders. For instance, George Vernon Russell was described as the "experienced and articulate" master planner for the industrial campus of Lockheed and the new Riverside campus of the University of California. Don Hisaka (one of the only nonwhite professionals to appear in civil defense literature) was the "sensitive, young, and energetic" designer with prior experience in the office of Minoru Yamasaki. Meanwhile, A. William Hajjar, a partner with Vincent Kling Associates, "has a powerful architectural philosophy" that the editor hoped to indicate with two full pages of Hajjar's design development sketches (Figure 5.18).

Despite the impressive curricula vitae of the participating architects, the designs in *Industrial Architecture* appear to be standard postwar factory buildings of modular and inexpensive construction. While a couple of the factories have glazed areas where natural light could be beneficial to the jobs performed—such as offices or machine shops—most of them are characterized by continuous perimeter walls of precast concrete panels. With artificial lighting, there was little reason for fenestration—in that aspect, industrial architecture often was bunkerlike. The design of Fred

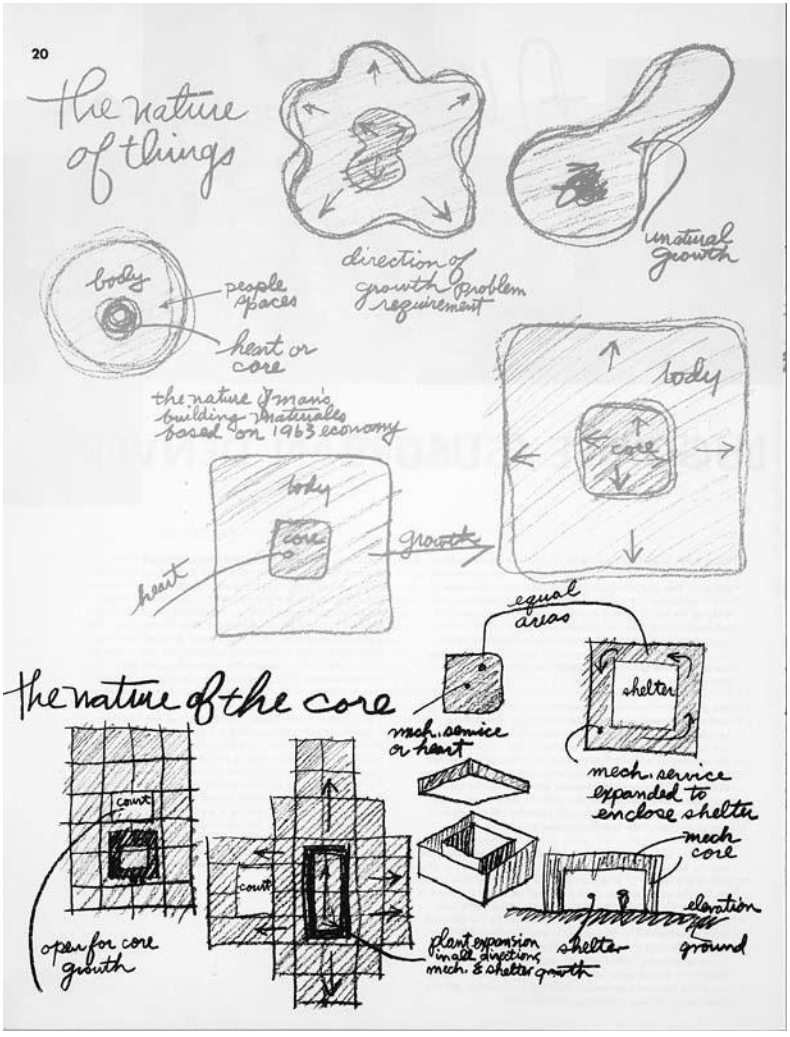


FIGURE 5.18. "The nature of the core": William Hajjar's design development sketches from *Industrial Architecture: Fallout Shelters.* Collection of Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal.

Bassetti, described as that "rare combination of the practical problem solver, the aesthete, and the humanist," is the most sophisticated of these projects in its incorporation of fallout shelter. The factory is a large rectangle of modular panels and pavilion roofs. But in the basement of an administration building separated from the factory proper—a separation of "brains" and "muscle," according to the accompanying text—Bassetti provides shelter with floor-to-ceiling glazing, through the clever arrangement of a deep overhang and a settling pool to capture fallout (Figures 5.19 and 5.20). This pleasant, sunken cafeteria space "strongly emphasizes

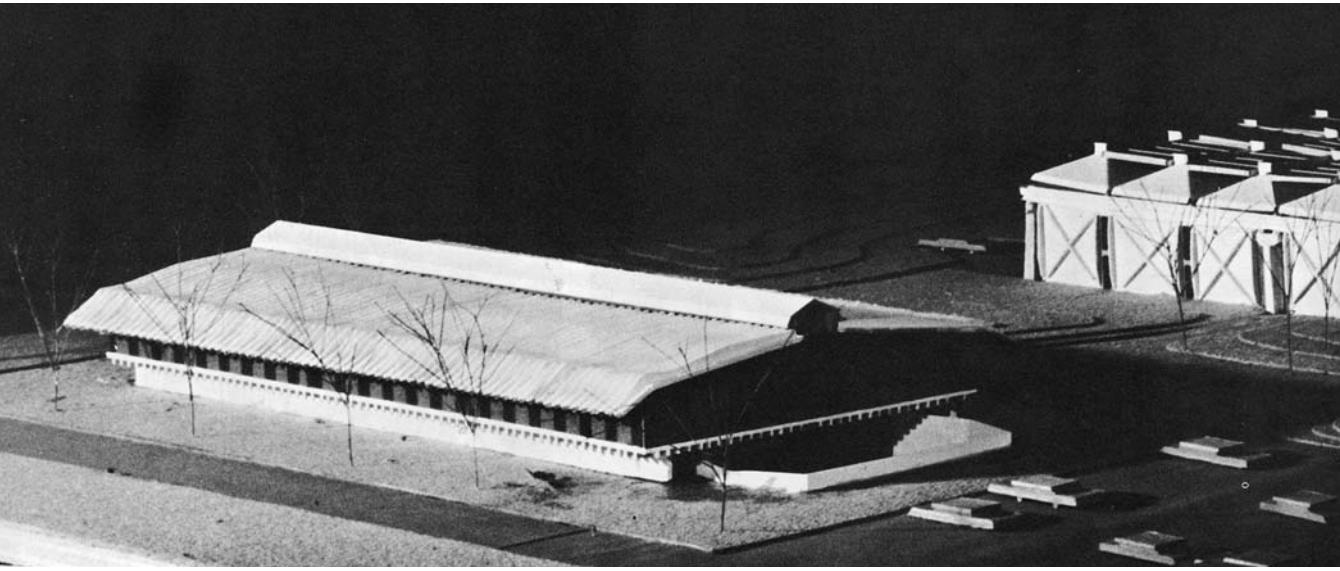


FIGURE 5.19. View of Fred Bassetti's design from the industrial architecture design charrette. Administration building with sunken court and settling pool in foreground; factory in background.

the psychological considerations of shelter design."[60] Moreover, the intersection of natural light, an inspiring water feature, and a cavernous embrace suggests the symbolism of ancient grottoes, places where people sought spiritual regeneration and architecture expressed a culture's desires and fears.

In the introduction to the other charrette publication, *City Halls and Emergency Operating Centers,* John Hill confirmed the possibility of a

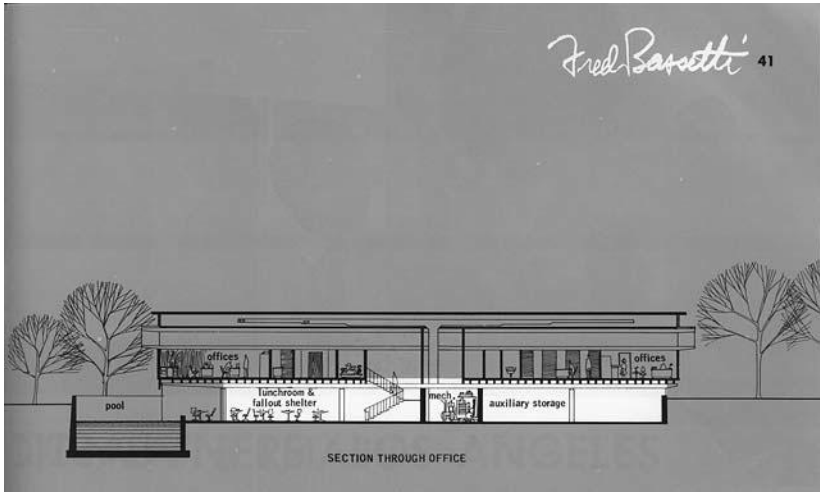


FIGURE 5.20. Section of Fred Bassetti's design for the administration building, with the lunchroom fallout shelter in white, from the industrial architecture design charrette.

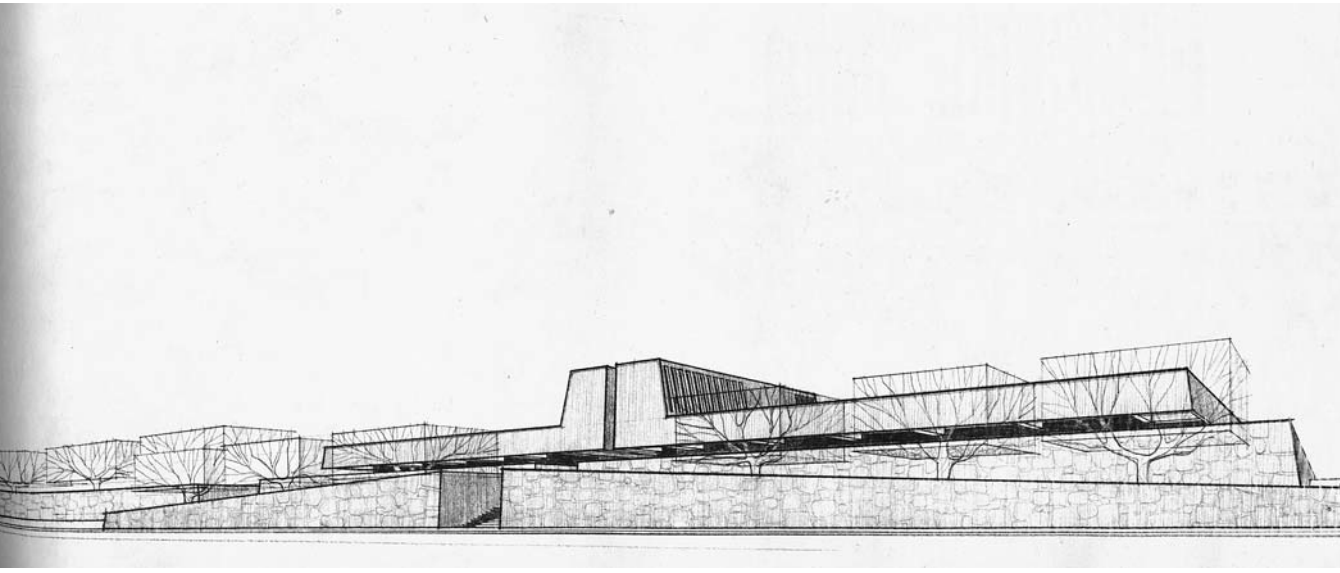


FIGURE 5.21. A perspective by architect Frederick Bainbridge of the city hall for "Palmway," produced as part of the second design charrette, which was held at the University of Kentucky. From Office of Civil Defense, *City Halls and Emergency Operating Centers* (Washington, D.C.: Government Printing Office, 1965).

time-honored symbolism in an architecture responding to contemporary geopolitical concerns: "Out of a clearer understanding of the hard realities of modern life can come an architecture no less expressive and humane than that of the past."[61] In this charrette, architect Frederick Bainbridge's design of a city hall for a fictional Florida city named "Palmway" reflected the "hard realities of modern life." Its uncompromising bunker architecture, defined by the sharp edges of its masonry glacis and "ramparts," a term deployed in the book's description, would not have been out of place on the French coast during World War II, let alone among the resorts of the Florida coast (Figure 5.21).

Like the AIA's conclusions about building codes, the charrettes showed that the technical aspects of protecting a building's occupants were not incompatible with the art of architecture. By virtue of the two well-known, high-art architects (out of eight in total) who were convinced to participate in the city hall charrette, the OCD came as close as it would come to establishing shelter design as an artistic endeavor. For the small, make-believe municipality of "Wind City," an impressive design was produced by architect Gunnar Birkerts, who, the text pointed out, had previously worked for such luminaries as Yamasaki and Eero Saarinen (Figures 5.22 and 5.23). A four-story, exposed concrete office block on *pilotis* housed the city bureaucracy and formed a gateway to a long, two-story, semiburied building that contained the public and ceremonial functions

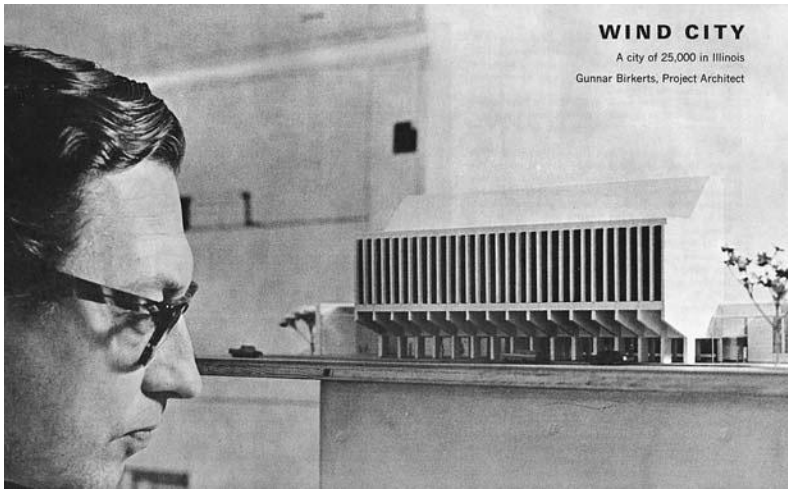


FIGURE 5.22. Architect Gunnar Birkerts gets a close look at his model of a city hall for "Wind City." From Office of Civil Defense, *City Halls and Emergency Operating Centers.*

of government. In this wing, the Emergency Operating Center (EOC) was colocated with the police and fire departments in the ground floor. Birkerts's design in particular seems heavily influenced by the finalists in the Boston City Hall competition, many of which used raised blocks, concrete planes, and deep-set openings. Moreover, on Birkerts's city hall and EOC, earth berming and a jaunty concrete roofline at just the right angle to deflect artillery shells (a feature of world war–era fortifications) placed this design squarely in the realm of bunkers.

Meanwhile, Charles Moore—by then a well-established designer, author, and chair of the architecture school at the University of California, Berkeley—worked with his own team of Kentucky architecture students on

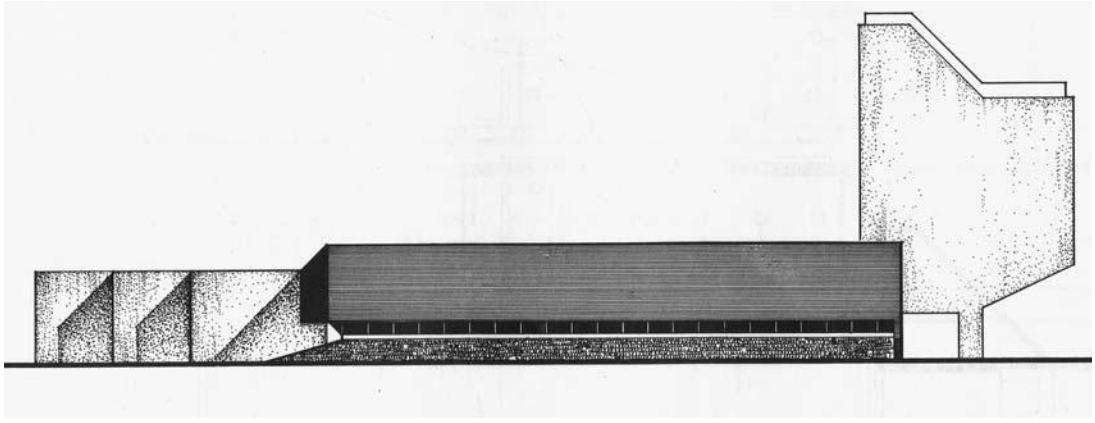


FIGURE 5.23. The elevation of Birkerts's buildings is a composition of concrete planes, an earth berm, and the narrowest possible strip of windows. From Office of Civil Defense, *City Halls and Emergency Operating Centers.*

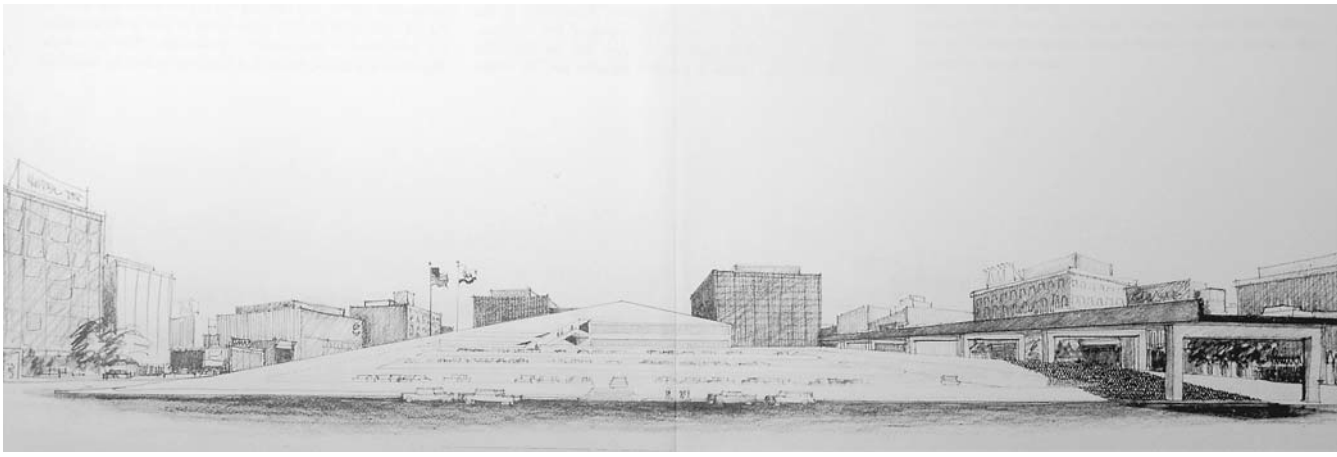


FIGURE 5.24. Perspective of Charles Moore's city hall for "Tortilla." From Office of Civil Defense, *City Halls and Emergency Operating Centers.*

a municipal building for the Southern California city of "Tortilla." Moore's decision to "make the entire site one strong, clear form" was meant to eclipse in scale and monumentality the adjacent freeway and surrounding standard office blocks (Figures 5.24 and 5.25; Plate 9). The city hall, its offices, courtyards, parking terraces, and public spaces were brought together in one monumental, grass-covered pyramid, in seeming tribute to premodern North and Central American mound cultures. As well, the earthen mound offered excellent fallout protection, while seeming to claim for the design its place in the history of fortifications.

Moore may have been having some fun with an experiment in paper architecture, but the conveners of the charrette were dead serious. William Durkee, director of the OCD, wrote in his foreword to the publication: "The cities described in this study and report are fictional. But the community conditions . . . [and] the excellent examples of municipal architecture developed . . . these are real. Just as real as the nuclear age in which we live."[62] The graphic and prognosticatory effects of architectural design lent themselves well to producing this required authenticity. By their participation in charrettes and competitions for civil defense, architects could achieve membership in the community of defense intellectuals that, during the Cold War, attempted to fortify the boundaries of national identity. The cultural edifice that sheltered identity—personal, professional, national—was "slanted" toward the interests of those with the power over its program, design, and construction. If the OCD was successful in convincing architects and their clients to include fallout shelter, each new building would be a statement of the national sense of purpose, a fortification on the home fronts of the Cold War.

CONCLUSIONS

The 1963 booklet illustrating the first national fallout shelter design competition concluded: "As a school transforms a child into a productive citizen, so must a shelter safeguard a frightened, possibly sick or injured person so that he can continue to be a productive citizen capable of rebuilding a severely crippled nation."[63] As welfare institutions, schools shelter, nurture, and heal people. In the Cold War, schools with fallout shelter were to be dual-purpose institutions that could both produce and preserve valuable citizens for (re)building the nation.

Not everyone viewed a dual-purpose architecture for civil defense as an appropriate national symbol. "The Talk of the Town" section in the *New Yorker* gave two columns to a review of the third fallout shelter design competition (for community centers) and its "snappy seventy-page booklet with a white plastic binder." First, in the magazine's sardonic tone the author noted the upbeat nature of the publication: "a small black stylized figure was pictured standing inside a stylized structure and being attacked, in a stylized way, by arrows of radiation with such rather cheerful names as 'Skyshine,' 'Ceiling Shine,' and 'Wall Scatter'" (for one of these images, see "Fallout Protection" in chapter 2). But after extensively quoting the competition program and other "blocks of laudatory text," the *New Yorker* waxed reflective:

> We flipped through the booklet and then put it aside reluctantly. It had a pleasant, reassuring quality. We like to think of the people in the pictures, faceless but smiling [the *New Yorker* had joked that architects were notoriously bad at drawing faces], closing their books in the library at the sound of the sirens, tucking the volumes under their arms, and descending quietly to the Lounge, to be joined by the folks from the gymnasium in their basketball uniforms, the Women's Club crowd from the civic auditorium, the kids drifting in from the classrooms. But the key words—"dual purpose"—were a good deal harder to put aside . . . "Dual purpose" and its no-good nephew "duplicity" are international favorites, and are highly favored at home. We Americans are beginning to hedge every bet . . . If we are given the chance, one day, to test the "habitability" of our dual-purpose shelters, with their "informal atmosphere" and "added delight to the human environment," and it is to be hoped, their shields against [fallout], there will be a cold logic to it—a fulfilling of the duality to which our minds have been so easily bent.[64]

As with terms like "shelter," "slanting," and "bunker," "dual purpose" took on a life of its own once released into the public discourses of architecture

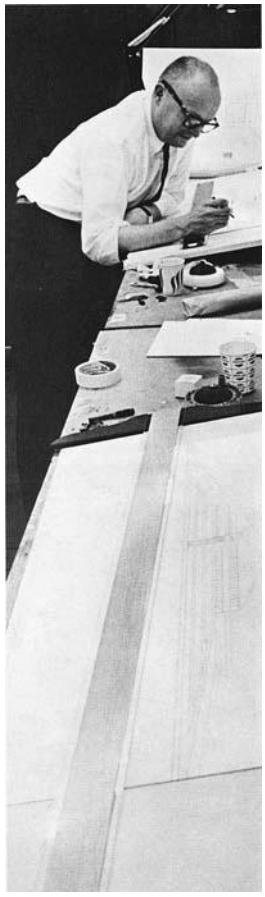


FIGURE 5.25. Architect Charles Moore at work on his city hall for "Tortilla." From Office of Civil Defense, *City Halls and Emergency Operating Centers.*

for civil defense and international relations. Since civil defense was mainly a rhetorical program, diction and meaning were crucial to its success.

Office of Civil Defense bureaucrats hoped that architecture would be an explicit, material way to communicate its message of national welfare. The "Report of the Jury" in the *National Community Fallout Shelter Design Competition booklet* laid out the professional and patriotic rationale behind the OCD-AIA endeavors, concluding that "thoughtful architects and designers throughout the nation could perform a valuable service for their profession and the country's welfare by seriously studying the results."[65] Moreover, the studious and professional performances of the particular architects and other experts who participated in the competitions, and especially in the charrettes, were staged for an audience of their peers. By making their responses to these programs seem authentic, they helped make the threats of the nuclear age seem immediate and survivable.[66] The status of the architectural profession would be well served if some of its members assumed responsibility for the design aspects of national security, and achieved the credibility associated with defense intellectuals in the 1950s and 1960s. As the jury recognized, the nation's "welfare" was at stake.

The design dilemmas associated with fallout shelter prevented any singular interpretation, however. Would fallout shelter be above- or belowground? Either. Explicit or invisible? Both. Would it result in a bunker architecture? Probably. The architecture for civil defense illustrated by the competitions and charrettes assumed the aesthetic and structural approaches intended for bunkers, though fallout shelter often was inserted in a manner too subtle for even the experts to see. Ironically, a bunker architecture sent the right message using the wrong architectural language. Could the more subtle approach of slanting impart the same meanings? Would the passage from ideal to real, in the construction of actual buildings with fallout shelter, temper the more expressive and oppressive aspects of a bunker architecture, without sacrificing the rhetorical goals of civil defense?

6. COLD WAR CONSTRUCTIONS

Fallout Shelter in New Buildings

> In most cases, the potential for fallout shelter in the award winning buildings appears as a natural or inherent characteristic of the basic design. As in all good design, the most natural—usually the simplest—solution is best.
>
> —**A. Stanley McGaughan, *1969 Architectural Awards***

By the mid-1960s, there were enough new buildings that incorporated fallout shelter to justify their display in numerous Office of Civil Defense (OCD) publications. Architects submitted their own buildings to the OCD in the hope of getting included in these booklets, exhibits, and even films depicting good design in the context of architecture for civil defense. Reflecting the elevated status of fallout shelter design, the American Institute of Architects (AIA) agreed to conduct two architectural awards programs in 1966 and 1969 on behalf of the OCD, to celebrate successfully completed projects. As explained by then AIA president, Robert L. Durham, who served on the first awards jury, "Now we have moved forward from the hypothetical to the real."[1] Now there were real buildings and fallout shelters, as opposed to the hypothetical studies of competitions and charrettes. Happily, nuclear war remained hypothetical, so these Cold War examples of good design were never tested in real life. The AIA and OCD deployed images and descriptions of these new buildings in their ongoing, collaborative, public and professional relations campaign to convince architects, building owners, and other stakeholders that Cold War protection was a necessary, natural, and nonintrusive aspect of the design process. Through the lens of these OCD publications, this chapter explores buildings constructed with fallout shelter from the late 1950s through the 1960s. I analyze these examples of architecture for civil defense according to the OCD and AIA criteria for good design, and against a shifting backdrop of threats and meanings in Cold War culture.

As a foil to everyday buildings with public fallout shelter, this chapter also examines a federal construction program for Emergency Operating Centers (EOCs). Although it never appropriated funds to aid in the construction of public fallout shelters, Congress happily extended money for the development of protected command centers for all levels of government. As parodied in dark comic fashion by Stanley Kubrick's 1964 film *Dr. Strangelove; or, How I Learned to Stop Worrying and Love the Bomb,* government officials at least would provide for their own bunkered protection. Meanwhile, regular citizens had to settle for shelter in the existing buildings of their communities, supplemented by a few slanted new structures.

Inequities such as these, seemingly integral to the fallout shelter program, increasingly were the target of civil defense critics. Moreover, critics believed that any shelter program at all put the United States on a constant war footing, thus inviting attack. For their part, architects revisited earlier debates over the ethics, efficacy, and even the possibility of designing for civil defense. In 1969–70, a militant architecture student body, politicized by protests against the war in Vietnam and other "Establishment" practices and institutional oppressions, crashed AIA conventions and chapter meetings. As a result, the AIA reluctantly was forced to reformulate its relationship with the OCD, and to rethink its responsibilities to a democratic society.

Given the professional and public battles over architecture for civil defense, it is perhaps ironic that fallout shelter was just as often invisible in published buildings—as suggested by this chapter's epigraph. That very invisibility was partly the point of disseminating these designs, to demonstrate that fallout shelter did not affect a building's appearance or daily use. At the same time, published buildings were meant to be object lessons in protection, so the invisibility of fallout shelter made it difficult for many architects or other citizens to comprehend the civil defense program. Further complicating the message, it rarely was made clear whether published buildings had been *intentionally* slanted. Analysts may have calculated the Protection Factors afforded by *inherent* characteristics of new structures, as they had done for existing buildings during the National Fallout Shelter Survey. Inherent or slanted, buildings chosen for publication by the OCD often were examples of the popular bunker architecture of the 1960s. Concrete building envelopes, reduced fenestration, overhangs, blank street walls, and recessed entrances combined to provide better barrier and geometric shielding than with other architectural approaches. Toward the

end of the 1960s, architects, clients, civil defense officials, and citizens increasingly came to recognize that this bunker architecture also served well in an era of urban unrest. As the scope of civil defense planning was expanded to include riots, marches, and other nonroutine public events, the rhetoric and architectural approaches forged in the early Cold War continued to resonate as the built embodiment of national security.

BUILDINGS WITH FALLOUT SHELTER: PROTOTYPES, PUBLICATIONS, PROMOTIONS

In the late 1950s, the Office of Civil and Defense Mobilization (OCDM) established a program to build at least one prototype fallout shelter in each state. These prototypes would be used for purposes of civil defense research and to serve as demonstration models for educating architects and the general public about Cold War protection. The national scope of the program was never quite realized, as property owners who agreed to accommodate or build the prototypes sometimes ran up against local zoning ordinances or site considerations that prevented their project. Partly because of these problems, the demonstration models often were located in local government buildings, where they were more easily instituted and maintained. For example, the new city hall in New Orleans, built in the late 1950s, soon added a federally funded prototype fallout shelter for six hundred persons in its basement. (For a building so recently designed with segregated restrooms and cafeteria, one wonders how the projected inhabitation and organization of this shelter was presented to and received by Crescent City residents.)[2]

At the level of state government, New York—as a leader in civil defense preparation—eagerly complied with the OCDM request for proposals, establishing in 1960 a prototype shelter for thirty-seven hundred persons in the basement of its eclectically styled, nineteenth-century capitol. On display to the public along the labyrinthine corridors of the building was an exhibit of bunks and mattresses, plus several storage areas with food, water, and other supplies. Minimal alterations were necessary in this structure: it received a new emergency generator with two weeks' supply of diesel fuel, while six door or window openings were shielded with concrete blocks. As with the other prototypes around the nation, in Albany the federal government contracted to pay the "additional shelter cost." For its investment, the OCDM would have access to the space for the duration of the contract (typically two years) in order to conduct

research and present educational events on such topics as "shelter design, shelter demonstration, shelter training and drills, public attitude studies, engineering studies, and habitability studies." In turn, the state agreed to:

1. Provide a representative to be on duty at the Protected Area at all times that it is open for public viewing;
2. Furnish and maintain a log of special visitors to the Protected Area . . .
3. Provide visitors to the Protected Area with civil defense information, booklets, etc.; and
4. Develop, with advice and counsel of the [federal] Government, a program of information relative to the Protected Area for public dissemination.[3]

Living up to its agreement, Albany distributed some eight thousand copies of a brochure titled *The New York State Capitol Fallout Shelter* to politicians, bureaucrats, civil defense officials, and "all architects registered by New York State." In 1961, the state's Civil Defense Commission granted permission for the OCDM to reprint this brochure for national circulation.[4]

Meanwhile, the city of Lincoln, Nebraska, using funds from the OCDM program, completed a rare, purpose-built public fallout shelter. Semiburied in a leafy neighborhood park, surrounded by Colonial-style houses, it would have been impossible to ignore. For its part, the public was offered daily guided tours of the shelter, which boasted its own well, cistern, communications equipment, generator room, infirmary, a permanent bunk area, and a "management room." The Lincoln shelter was inaugurated as if it were a monumental public edifice. According to a local report, two hundred people attended its ceremonial opening in 1962, which included the presentation of the keys to the mayor and county board chairman. Also in attendance were the Nebraska governor and the U.S. deputy assistant secretary of defense Paul Visher, who was the "featured speaker at a noon luncheon."[5] Events such as this inauguration extended the tradition of fallout shelter marking and stocking ceremonies. On a newly constructed building, shelter signage might replace the cornerstone as an indicator of the structure's historical significance.

A prototype project that garnered national media attention was the 1962 Abo Elementary School in Artesia, New Mexico, a windowless concrete bunker that was constructed entirely underground. According to coverage in the *Saturday Evening Post,* residents voted to pay for the unusual design when they realized that "there was not a single building in town that could serve as a public fallout shelter," despite Artesia's proximity to

the White Sands Missile Range.[6] The OCDM agreed to cover specific costs related to underground construction, some 29 percent of the total price tag. In this prototype shelter, classrooms would double as sleeping quarters during "fallout conditions"; the multipurpose room would become the dining area; the refrigerated food storage locker would serve as a morgue, if necessary. The only elements of the school unique to its shelter purpose were the pass-through decontamination showers and lots of extra storage for cots and "survival food." An original perspective found in the school depicts it in an idyllic rural setting; or perhaps a new subdivision at the edge of town, as suggested by two contemporary houses lined up on a street that disappears off the left edge of the painting (Plate 10). All that shows of the school at ground level is a flat slab painted with basketball courts and the covered walkways that connect three block structures housing the stairwells. Two of these blocks flank the main approach from the parking lot in a welcoming gesture. The school and the fallout shelter announce themselves in aluminum architectural lettering, punctuated by a flagpole (Figure 6.1).

In an engineering case study of Abo that he wrote for the OCD, its architect, Frank Standhardt, postulated that "the dual functions of a windowless school and of a community shelter are completely compatible"; the latter use was simply a "logical extension" of the managed spaces

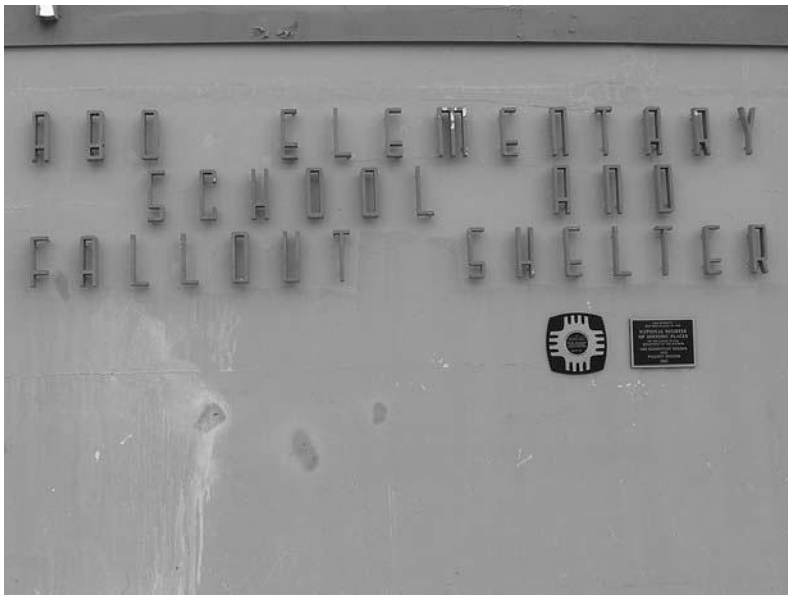


FIGURE 6.1. Lettering on Abo Elementary School. The small signs indicate that the building is now on the State and National Registers of Historic Places. Photograph courtesy of Byron Miller.

and ordered inhabitants engendered by the former.[7] The *Post*'s balanced account of the building was generally in agreement. The magazine noted that many teachers and students preferred the windowless subterranean space for pedagogical reasons and that parents were "not alarmed" by sending their children to school in a bunker. But the *Post*'s description of Abo reflected the discomfort of the author and others he interviewed with the implications of the design. Passage from the open, ground level courts into the stairwells provoked concern: "These entrances are narrow, dimly lit and painted a dark red. Somehow they seem vaguely threatening."[8] Downstairs, corridors were built extrawide to combat claustrophobia, and the color palette moderated to a warm rose and pale institutional green. Ingress and egress, though, continued to bother the *Post*. In an emergency, once the fallout shelter reached capacity, massive steel doors would keep out "those who came late—the parents, perhaps, of the children inside." Typical of the reception of bunker architecture, possible interpretations ranged from protective to threatening, often in the same sentence.

The Abo prototype was the sole subterranean school built in the United States, but its architect, Frank Standhardt, remained a committed designer of *aboveground,* windowless institutions, long after OCDM prototype funding had dried up. The same school district in New Mexico built about a dozen according to his designs. In its building of "educational facilities predicated on an optimum controlled environment," the New Mexico school district first of all was concerned with the expense of air-conditioning in a desert climate; they soon recognized that windowless schools provided protection from more than just solar radiation. Two of Standhardt's designs were included in the 1965 publication *New Buildings with Fallout Protection,* one of the first in the OCD series of illustrated booklets targeted at architects and other stakeholders in building development (Figure 6.2). Regimented assemblages of mute, boxlike brick forms, as if they were the Abo design brought to the surface, Standhardt's aboveground schools continued to epitomize his own and his clients' interest in the "orderly, scheduled use of the facilities."[9] In addition, at least nine others designed by different architects were built around the country by 1964.

Other examples of the windowless school published by the OCD were less staid than Standhardt's designs, the buildings more threatening in aspect. In 1964–65, architects Curtis & Davis inflicted a number of these schools on the students of New York City, where, up till then, state codes had prohibited windowless classrooms. In fact, it seems this regulation was changed for reasons of civil defense. A letter from the State Education

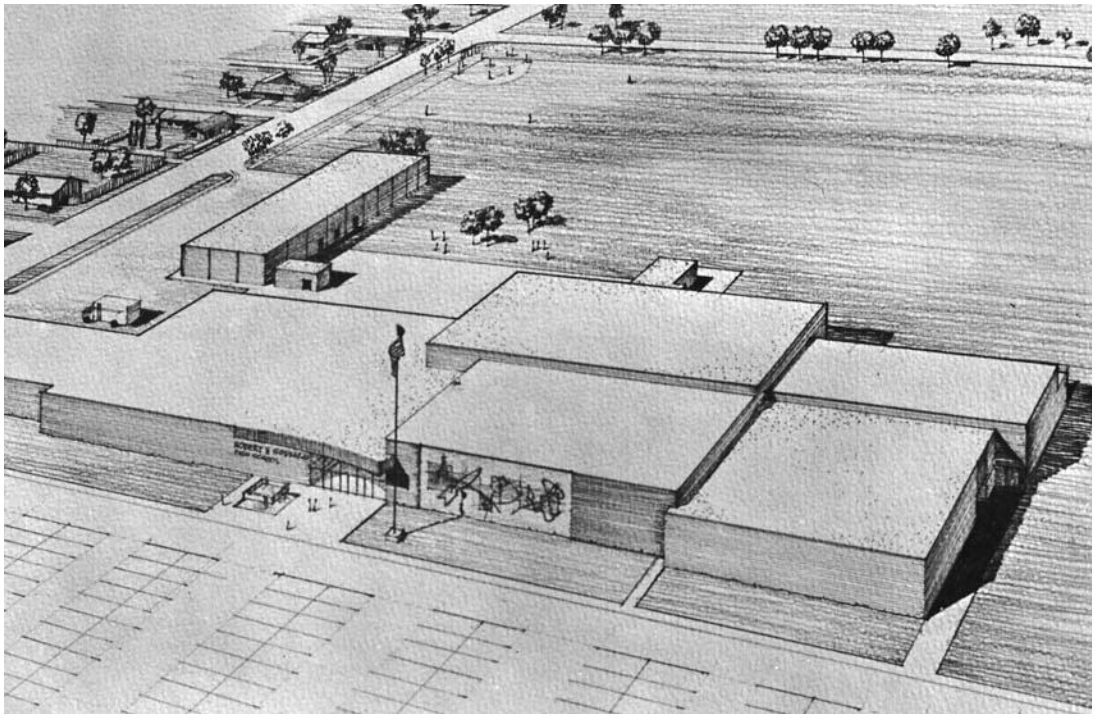


FIGURE 6.2. Fallout-protected Goddard Senior High School, Roswell, New Mexico; Frank Standhardt, architect. From Office of Civil Defense, *New Buildings with Fallout Protection* (Washington, D.C.: Government Printing Office, 1965).

Department reflects the relaxation of the code in response to the "Cuban crisis": "Classrooms, as a last resort, may be permitted to be windowless and in below grade locations provided they have a fallout protection factor of 100 *and* that all more acceptable alternatives have been explored."[10] It is unknown what alternatives Curtis & Davis explored before Brooklyn's Junior High School 55 went to bid in spring 1964, but the end result was a windowless concrete fortress articulated by vertical battlements (Figure 6.3). The glowering sky in the rendering only exacerbates the foreboding character of the aesthetic.

In a similar vein, though with a somewhat less medieval aesthetic, the same architects' Junior High School 201 was a textured box on stilts with the air of a prison, an effect not remediated by the fenced exercise yard in the perspective (Figure 6.4). Fallout shelter in this building was inherent, not designed, found retroactively by a shelter analyst. What, then, was this defensive, even militaristic, mode of architecture offering the school board? That JHS 201 was built in 1964 in the very heart of Harlem suggests that the need for shelter from the Cold War overlapped with the desire to protect property from a racialized, urban underclass. Throughout

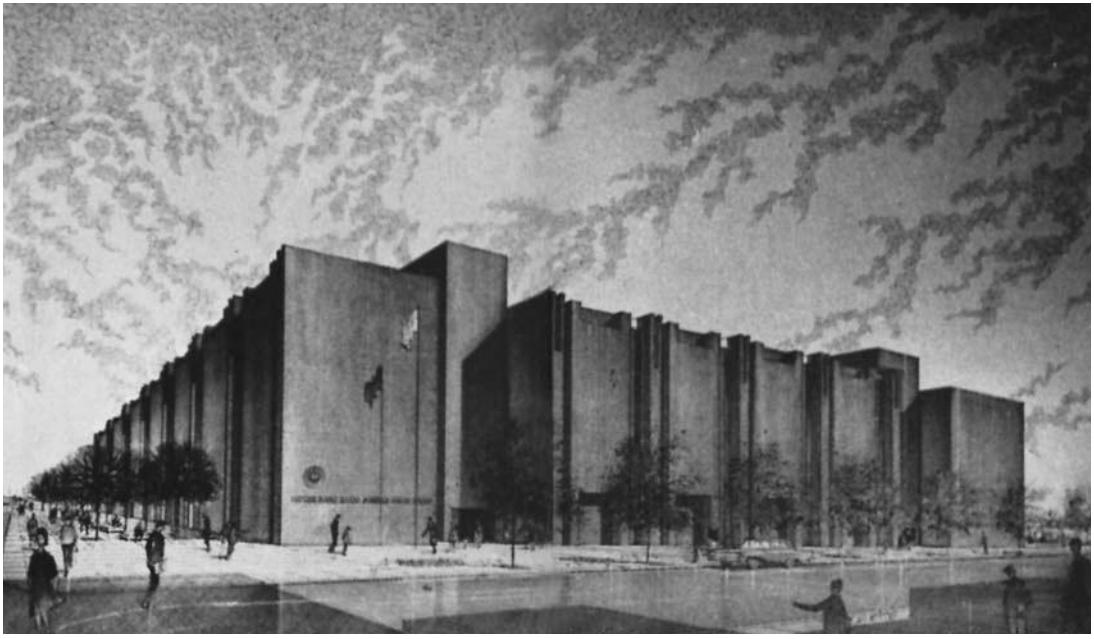


FIGURE 6.3. Fallout-protected Junior High School 55, Brooklyn, New York; Curtis & Davis, architects. From Office of Civil Defense, *Schools Built with Fallout Shelter* (Washington, D.C.: Government Printing Office, 1966).

the mid- and late 1960s, many white Americans were deeply afraid of violent racial conflict in U.S. cities and worked actively to "contain" minority populations.[11] In an inner-city context, the bunker architecture of the windowless school indicates an explicit design response to this fear of the Other. It was not accidental that the perspective of this school is one of the rare instances in the history of American architectural drawing when figures are included that appear African American in their hairstyles, dress, and streetwise postures—these are the figures inside the iron fence. Meanwhile, enjoying the freedom of the public sidewalk outside the fence, white children stroll by, heads turned toward a scene resembling a caged exhibit at the zoo. Shelter space in JHS 201 was available on the entire basement level and first two stories by virtue of the twelve-inch-thick floors and walls (Figure 6.5). Although the corridors and lobby of the ground floor were glazed, they still offered fallout protection because of their deep setback behind the peristyle patio. Nevertheless, the school board worried that "control" in this area exposed to the outside "will be difficult."[12] As with Abo and other windowless schools, New York's JHS 201 seemingly was designed for social control as much as for scholarly pursuits, despite what architects or school board officials might have argued about more consistent lighting and lower operating costs. Indeed, these

FIGURE 6.4. Fallout-protected Junior High School 201, Manhattan, New York; Curtis & Davis, architects. Photo no. 32-S-25; RG 397-MA; National Archives, College Park, Maryland.

bunkers would maintain their appeal to some school boards throughout the civil unrest of the 1960s and early 1970s.

Windowless buildings made good shelters, from whatever threat; whether they were examples of good design was another question. In 1962, Assistant Secretary of Defense for Civil Defense Steuart Pittman presented Frank Standhardt a certificate of appreciation for his numerous published buildings with fallout shelter. However, Standhardt never received acknowledgment from the AIA for "significant contributions to architecture and society," the criteria for being elected to the institute's College of Fellows. His name was put forward for fellowship the maximum three attempts from 1968 to 1970, but was rejected each time.[13] Evidently, AIA members did not recognize as good design the main accomplishment listed on Standhardt's application: fallout shelter in windowless structures. Indeed, despite Pittman's show of support, those windowless bunkers worked against the stated intention of the OCD—to demonstrate that fallout shelter was possible in typical, everyday construction.

Although schools were by far the most common building type, OCD publications included many others as well, ranging from police and fire stations, apartment complexes, industrial plants, and churches, to the

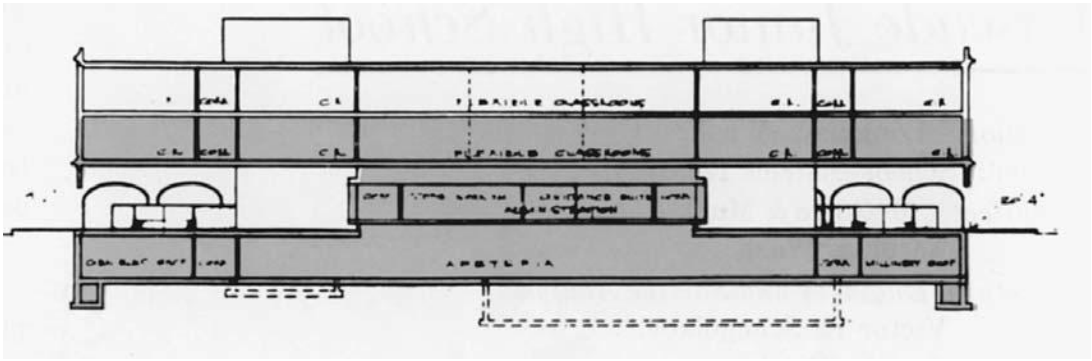


FIGURE 6.5. Section of Junior High School 201, with fallout shelter space in shaded areas. From Office of Civil Defense, *New Buildings with Fallout Protection.*

Detroit Service Center for Boy Scouts of America, by Eberle M. Smith Associates, an architectural firm known for its research on fallout shelter design. Compared with the results of the hypothetical fallout shelter design exercises, most of the built examples included in the OCD publications of the late 1960s were subtler and more open, *slanted* rather than hardened. If they did not always look like bunkers, these examples of architecture for civil defense often evoked the spirit of a bunker.

For example, the elegant City National Bank building in Los Angeles, designed by Austrian émigré Victor Gruen (Figure 6.6), demonstrated that fallout shelter was possible behind (or rather, below) the extensive areas of fenestration typical of 1950s corporate modernism. According to its developer, Buckeye Realty and Management Corporation, this bank building incorporated in the lower levels of its parking garage the "Nation's first privately-sponsored Civil Defense fallout shelter" also open to the public. As Buckeye stated in a report to the OCD, not only the employees of the commercial tenants, but local residents and all "persons traveling or visiting in shelter neighborhood at time of emergency will find its doors open to them."[14] The building also demonstrated the altruism of the owners, who had "initiated the program on their own" and purchased their own shelter supplies to be "stored in spaces that were specifically designed for this purpose."[15] Dedicated in September 1961, just as the OCD inaugurated the National Fallout Shelter Survey, this protected area to accommodate four thousand people received national recognition from such figures as the American Red Cross director of disaster services, Secretary of Defense Robert McNamara, and President John F. Kennedy himself. Despite the glazed, cubic pavilion of the banking hall, a feature associated with corporate modernism, the design of City National anticipated key aspects of a bunker architecture. The glass pavilion, accessed from the narrow end of

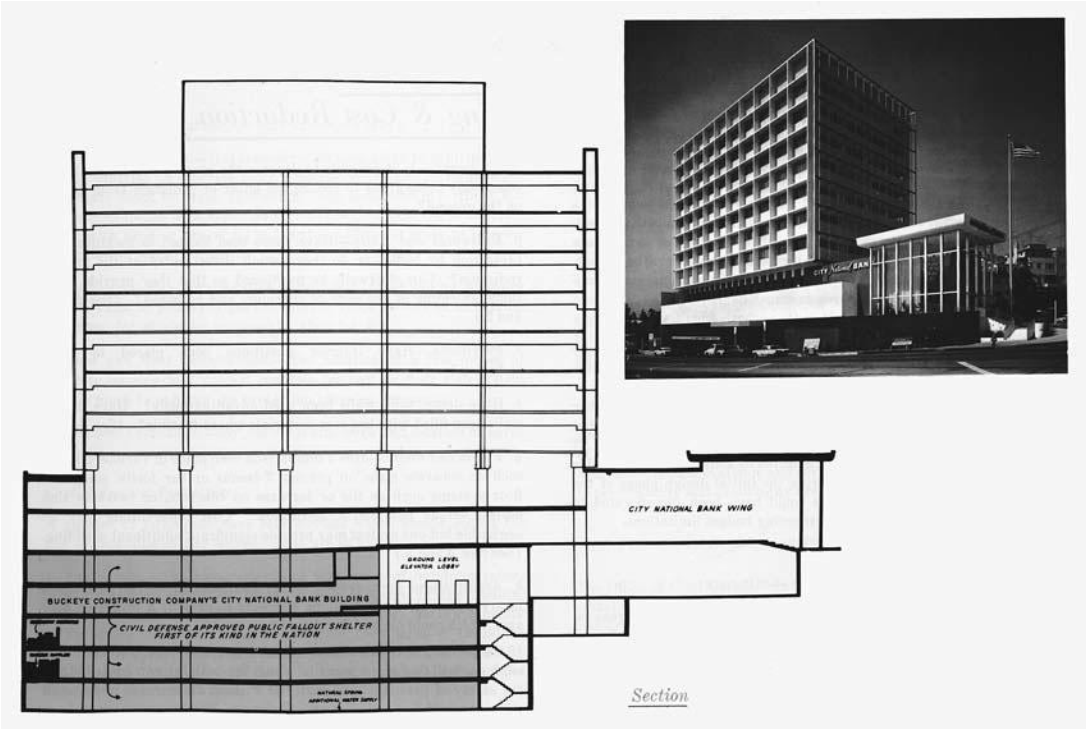

CITY NATIONAL BANK WING
GROUND LEVEL ELEVATOR LOBBY
BUCKEYE CONSTRUCTION COMPANY'S CITY NATIONAL BANK BUILDING
CIVIL DEFENSE APPROVED PUBLIC FALLOUT SHELTER FIRST OF ITS KIND IN THE NATION
Section

FIGURE 6.6. City National Bank, Los Angeles; Victor Gruen, architect. Fallout shelter shown in gray on sectional drawing, with glazed banking hall to the right. From Office of Civil Defense, *New Buildings with Fallout Protection.*

the site behind masonry stairs and planters, is shielded from the street by a twelve-foot-high wall, clad in polished granite. This windowless street wall, itself capped by two more blank horizontal planes at the mezzanine level, each rendered in a different material and color, provided excellent protection from fallout and other potential threats. Furthermore, even though fallout shelter was not demarcated in its upper stories, the tower's fenestration foreshadowed later designs. Through the use of concrete panels, glazing was reduced by half in each square of the facade grid, a basic design choice for slanted buildings, here indicating a first step away from the glass box toward more opacity.

Notwithstanding the lack of fallout shelter in Gruen's high-rise banking tower, skyscrapers certainly had protective potential. One example published by the OCD was a high-rise residence for seniors in Minneapolis, where protection was available in the basement and in the corridors of the middle floors, which would be distant from fallout sources on the roof and ground. Another instance from Minnesota was the 3M Administration Building in St. Paul, by Ellerbe & Company (Figures 6.7 and 6.8). As the OCD explained in *Fallout Shelter in Industrial and Commercial*

FIGURE 6.7. 3M Administration Building, St. Paul, Minnesota; by Ellerbe & Company. From Office of Civil Defense, *Fallout Shelter in Industrial and Commercial Buildings* (Washington, D.C.: Government Printing Office, 1967).

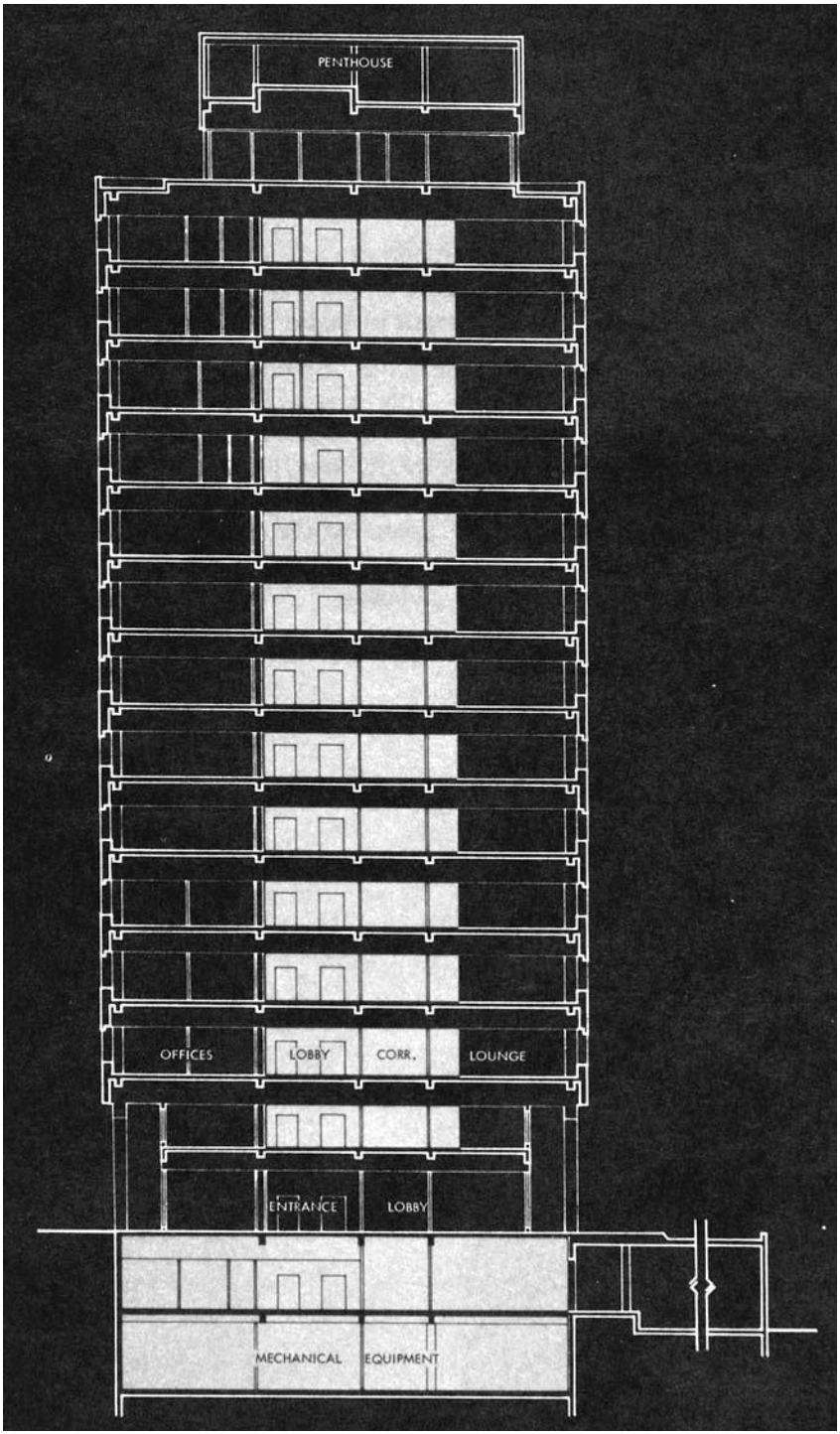


FIGURE 6.8. Section of 3M Administration Building; fallout shelter marked in gray. From Office of Civil Defense, *Fallout Shelter in Industrial and Commercial Buildings*.

Buildings, this structure's interior core offered good fallout protection even though its "exterior walls contain nearly two acres of glass."[16] The beautiful architectural photograph showing the 3M Building reflected in a placid water body seems to emphasize its crystalline qualities, although concrete panels reducing the glazed area of the curtain wall—as on Gruen's building—indicate that this was no purist glass box. These high-rise examples established that a bunker ethic was compatible with a full range of design approaches and typologies. That their architects went out of their way to submit drawings and specifications to the OCD, with the hope that their buildings would be published as exemplars of architecture for civil defense, suggests that these professionals had assimilated the goals and methods of protective design.

Architects cited their inclusion in OCD booklets on their curricula vitae as evidence of their expertise in designing shelter from the elements. Between 1964 and 1967, architect A. Stanley McGaughan, who advised the OCD on the choice of buildings for its fallout shelter publications, collected about 140 submissions from architects hoping to get their buildings in print. The variety of building types chosen by the OCD was meant to embrace the widest possible swath of stakeholders. The distribution list printed on the inside back cover of *Schools Built with Fallout Shelter* indicates the typical dissemination of fallout shelter design publications:

> State and Local CD Directors
> OCD Regions
> Defense Coordinators of other Federal Agencies
> Qualified Fallout Shelter Analysts
> Architects and Engineers Attending a Fallout Shelter Analysis Course
> CE-BuDocks Field Offices
> Chief State School Officers
> Architectural, Engineering and Consulting Firms with Certified Fallout Shelter Analysts
> Foreign Activities List
> And Others

In this case, "Others" would have included school administrators at educational conferences, where the OCD often had a display, and architects who specialized in school design (of which there were many in the aftermath of the baby boom). Office of Civil Defense materials also were targeted—through content and distribution—at decision makers such as apartment and office building developers, industrial plant managers, neighborhood

planning committees, and building code officials. Overall, as many stakeholders as possible would receive the message that real buildings, for real institutions, had been constructed to combat the hypothetical situations of nuclear war.

The OCD's collection of slick publications should not suggest the ubiquity of fallout shelter in new buildings, however. While many new structures may have offered inherent radiation shielding—continued updates of the National Fallout Shelter Survey would track these locations—relatively few shelters were purpose-built. As a result, in 1967 the OCD initiated its most targeted program, the Direct Mail Shelter Development System (DMSDS), meant to "supplement existing civil defense programs aimed at acquainting architects and engineers with fallout protective techniques." The DMSDS was based on information compiled in the *Dodge Reports,* a construction industry publication that tracked new projects at the planning phase, when the "names and addresses of the owner and architect, and the building's type, size, valuation and location" were known, so that potential building contractors could bid on jobs. Using the *Dodge* data, OCD personnel could direct letters to the actual owners and architects of specific projects at the earliest stages, "urging they consider fallout protection."[17] Simultaneously, the pertinent state or local civil defense official would be dispatched to make contact with the owner. As the OCD *Annual Report* stated, "Follow-up with owners by responsible CD is a face-to-face effort, if possible."[18] If these initial actions piqued the interest of those in charge of a building project, a fallout shelter analyst would be made available through the Professional Advisory Service attached to the closest Civil Defense University Extension Program. These consultants were paid for through the DMSDS, an indirect method to partially fund fallout shelter in new construction.

The regional Professional Advisory Services had been established in 1965 to provide guidance to design firms involved in projects that had fallout shelter potential. The development of the DMSDS two years later suggests that the Advisory Service had been underutilized by architects and their clients. The DMSDS would suffer the same fate. Boxes of files from the Professional Advisory Service at the University of Minnesota record a litany of failed attempts to convince owners to incorporate fallout shelter. Even the most promising DMSDS dossiers—in which multiple letters and consultations were shared among the service, the architects, and the fallout shelter analysts—became cold cases during the construction budgeting phase.[19] Since persuading owners to spend extra money on

protective construction was virtually impossible without federal regulation and funding, frustrations such as these only renewed the OCD and AIA's commitment to reach architects with the message that "good design" and fallout shelter were synonymous. Their public relations efforts, traced through the competitions, charrettes, and publications of new buildings, culminated in two architectural awards programs.

PRIZEWINNING PROTECTION II: ARCHITECTURAL AWARDS

The OCD could illustrate buildings and recommend designs in any number of publications, but it was cognizant that it had no credibility as an arbiter of architecture. This was the role played by the AIA in their partnership. Professional architects already had several processes for judging "good design." One of the most prestigious in this period was the annual AIA Honor Awards program, first run in 1949. In fact, the initial association made between fallout shelter space and award-winning buildings piggybacked on this well-established program. Beginning in 1966, photographs of recent AIA Honor Awards winners were used to illustrate OCD information sheets about fallout and slanting. These sheets were inserted in *Sweet's Construction Catalog,* the industry-standard reference manual on the shelf in almost every architecture and engineering office. Displayed under the general heading "Buildings with Shelter" were prominent, prizewinning firms and buildings, such as Skidmore Owings & Merrill's BMA Company skyscraper in Kansas City, Missouri (10,000 shelter spaces); the Tiber Island apartments by Keyes, Lethbridge & Condon, part of the massive urban renewal plan for southwest Washington, D.C. (13,942 spaces); and even the expressionist Dulles Terminal in Virginia, by Eero Saarinen & Associates (2,737 spaces).[20] The captions list only architect and shelter capacity; they do not reveal whether those spaces were inherent or designed, accidental or slanted.

The AIA also replicated its Honor Awards format for the OCD. McGaughan, who was project director for all the AIA-OCD contracts, invited architects from across the nation to submit their best buildings that incorporated fallout shelter. A jury of their peers would judge the quality of the designs first; only then would a qualified fallout shelter analyst approve the protective capabilities of the jury's choices. Architects who won, and sometimes their clients too, were presented the awards in a ceremony on-site, or sometimes at the Pentagon, where OCD officials expressed their appreciation of the design work (Figure 6.9).

FIGURE 6.9. Principal from the architectural firm Delawie, Macy & Henderson points to his award-winning design for a building with fallout shelter in 1969: a U.S. Navy barracks in San Diego. *At right:* A. Stanley McGaughan. Photo no. 12-A-13; RG 397-MA; National Archives, College Park, Maryland.

Many of the award-winning projects provided shelter in the subtle manner celebrated by the AIA and OCD. Earlier, hypothetical competition and charrette entries had been designed wholly within the context of civil defense, and their bunker architecture often was explicit and unapologetic, if sometimes criticized by the juries. In contrast, the buildings receiving architectural awards were designed for clients and programs first, while fallout shelter was a supplementary, sometimes postrationalized, concern. Additionally, the awards juries strove to include a variety of building types, and real clients for office and apartment buildings or single-family residences may not have approved the forbidding imagery seen in the earlier design programs—and in contemporary building projects—for institutional and industrial architecture. Finally, shelter criteria for the architectural awards were far less stringent than for the hypothetical programs; that is, the architectural awards program accepted the OCD minimum standard of Protection Factor (PF) 40, whereas the first two competitions and both charrettes had demanded PF 100. This difference allowed for lower wall and floor densities.

For example, one 1969 award winner was the heavily glazed, 910 Capitol Building in Richmond, Virginia, by Marcellus Wright & Partners, a nine-story tower the jury described approvingly as a "simple and dignified

new office building at home with its older neighbors" in the state government precinct (Figure 6.10). The building's shelter analyst was satisfied to note that the client, the Life Insurance Company of Virginia, "became interested in providing a fallout shelter primarily due to interest created by the fallout shelter survey being conducted at the time."[21] The analyst had calculated that the mechanical subbasement and the basement parking

FIGURE 6.10. 910 Capitol Building, Richmond, Virginia; Marcellus Wright & Partners. Photograph by the author.

garage both afforded a large amount of protected space, and the client agreed to add a standby generator to the project budget for ensuring ventilation and light in this subterranean shelter. More agreeable shelter space was available on the middle floors in an area away from the windows and demarcated by the building's interior columns and service core (Figure 6.11). One only can imagine how shelterees might have been contained within this unbounded space. No official fallout shelter signage would have been adequate to inform laypersons of the limits to shelter in each office area—perhaps a change in flooring colors or materials would have been effective, but hardly likely in the context of peacetime decorating.

Although an explicit bunker aesthetic did not predominate among the architectural award winners, many of these buildings still embodied an ethic of civil defensiveness behind their amicable facades. Some architects burrowed a portion of their award-winning building into a hillside for barrier shielding; others were extremely stingy with fenestration; still

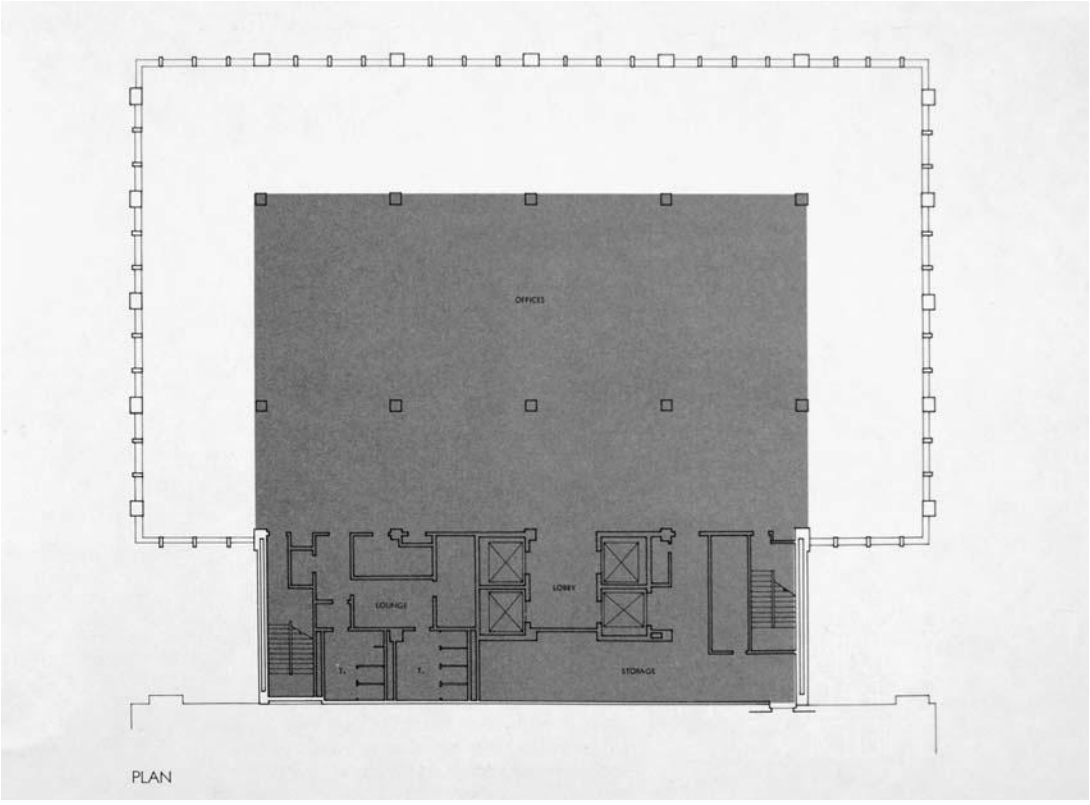


FIGURE 6.11. Plan of typical office floor in 910 Capitol Building, with fallout protection indicated in gray. Shelter boundaries follow an imaginary line connecting the interior structural columns of the building. From Office of Civil Defense, *1969 Architectural Awards* (Washington, D.C.: Government Printing Office, 1970).

others manipulated, or slanted, the placement of openings, staircases, and masonry interior walls. Most notable is the number of basement shelters among the winners, again running counter to the OCD's purported commitment to aboveground fallout shelter space. A 1966 award winner, Blackwell Senior High School in Oklahoma, by architects Caudill Rowlett Scott, sat on an unexcavated site, except for a small basement theater under the "central study area that is the focal point of the school" (Figures 6.12–6.14). From the aspect of "good design," the jury comment explained that the "building clearly expresses [its] organization by the contrast of the glassed walls of the central area with the simple windowless classroom wings." The theater served a dual purpose in also "protecting the school community against possible fallout radiation hazards and probable tornadoes."

This particular award-winning design points to a number of problematic ambiguities intrinsic to the fallout shelter program. First, it is difficult to understand how windowless classrooms are better than going "to school in a hole," the critique that the architect Caudill himself had made in presenting an aboveground alternative in the *AIA Journal.* Furthermore, it seems odd in a premiated structure that there was no fallout shelter space made available in those windowless areas, especially since the small basement shelter only accommodated 406 students, about two-thirds of a "school community" that totaled 600. The architects' choice of "conventional" and "lightweight construction" throughout was a missed opportunity of staggering proportion—that is, a thicker roof slab over the classrooms, and perhaps some other minimal slanting, may have

FIGURE 6.12. General view of Blackwell High School, Blackwell, Oklahoma; Caudill Rowlett Scott, architects. From Office of Civil Defense, *1966 Architectural Awards: Buildings with Fallout Shelter* (Washington, D.C.: Government Printing Office, 1968).

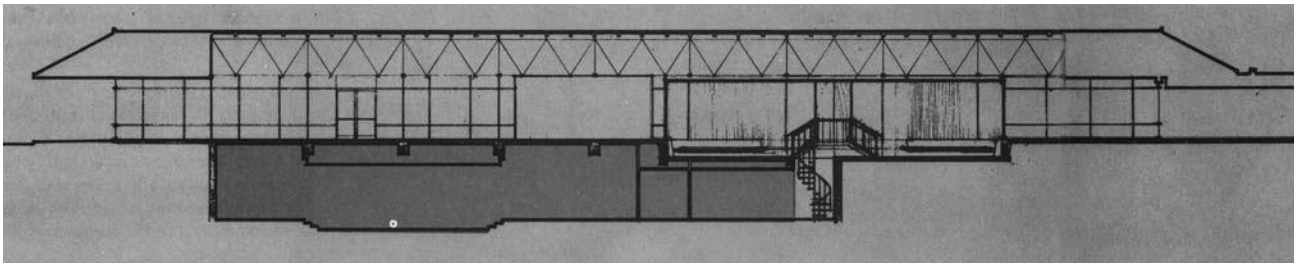


FIGURE 6.13. Section of Blackwell High School, with fallout-protected theater in darker gray. From Office of Civil Defense, *1966 Architectural Awards.*

increased the number of fallout shelter spaces to cover the total staff and student body, if not a goodly portion of the surrounding neighborhood. And yet, the building was judged to be award winning within the context of the OCD program. Was there a lack of appropriate submissions, forcing the jury to premiate suspect designs? Did none of the dozens of school architects represented in other OCD publications submit their designs to McGaughan and the awards jury? Were Caudill and his firm being rewarded for earlier support of the fallout shelter program? Regardless, choices like Blackwell High School only could have worked to undermine

FIGURE 6.14. Basement theater in Blackwell High School. From Office of Civil Defense, *1966 Architectural Awards.*

the OCD's promotion of rationally planned, aboveground shelter. Perhaps the operational factor for most buildings with fallout shelter, restated often in the awards publications, was that the "combination of materials and spaces which were required under the [architectural] program yields a fallout shelter at no additional cost to the owner."[22] Without federal funding, few commissions provided the budget to design or build fallout shelter.

Furthermore, the particular "combination of materials and spaces" that made up a building with fallout shelter could be so subtle as to undermine the public relations project of civil defense. McGaughan admitted in the *1969 Architectural Awards* publication that, even as one of the foremost national experts on the subject, he had trouble detecting the specific aspects of shelter in many buildings with fallout protection: "It is difficult to see what design changes would be involved if shelter were not provided or in some cases to judge if the incorporation of radiation protection resulted from early programming or came without trying during the design development stage."[23] For the OCD, this programmatic ambiguity was a catch-22: in concealing the material evidence of protection, AIA-endorsed "good design" actually made fallout shelter promotion more difficult.

Finally, conspicuous among the two architectural awards programs, and equally so in the other OCD publications of new buildings with fallout protection, was the almost total lack of government office buildings, a building type erected in great numbers during the period. This deficiency was emphasized by one exception among the award winners, the Hilo State Office Building, where "a needed basement parking area, motor pool, and service area, provided shelter naturally as dual-use space." As McGaughan wrote further about the project, "The trend to require shelter in Federal, State, and other public buildings is demonstrated by the program requirements for 3000 shelter spaces."[24] His optimism belies the actual status of government shelter construction, however. Since civil defense was a program responding to national aspirations and needs, subsidiary levels of government looked to the feds for funding and leadership in shelter development. Beginning with the Kennedy presidency it had been policy to include fallout shelter in the design of new federal buildings, but always subject to security and budget. The contingency built into this policy almost inevitably meant that fallout protection was cut from any construction budget. The national director of civil defense, William P. Durkee, explained to a 1964 meeting of the Construction Industry Advisory Committee:

> All fund requests for new federal buildings are required to include shelter and this is usually shown as a line item on the budget rather than a "taken-for-granted" part of the building, such as stair enclosures and other similar safety features. Because of this, the Independent Offices Appropriations Committee [in the U.S. Senate] deletes it to conserve funds.[25]

Frustrated architects and proponents of civil defense regularly railed against this shirking by the federal government. Arthur W. Peabody, architect and director of the civil defense Professional Advisory Service in Minnesota, reflected the bitterness of this situation in a 1970 letter about his years of experience with the fallout shelter program. In addition to a growing dearth of government supplies to stock any newly developed shelters, and a lack of direction and communication from upper levels of the civil defense hierarchy, Peabody complained that "it continues to be a source of irritation that GSA projects, armories, etc. have no shelter requirements. It should be a matter of standard practice that HEW and HUD programs *have* shelter . . . instead of simply *allowing shelter to be included.*"[26] How much more frustrating was this practice when it stood in stark contrast to a well-known, federally funded construction program for government bunkers?

BUNKER BUILDING: EMERGENCY OPERATING CENTERS

As early as 1950, just after the Soviet Union became the world's second atomic power, the United States commenced the construction of "continuity of government" bunkers. These top-secret bunkers—built underground or inside mountains in locations remote from theoretical targets—were designed to protect members of the federal government and the military, as well as important documents and communication systems, so that the United States would continue to exist as a viable political entity after a nuclear attack on its territory. In *Survival City,* architecture writer Tom Vanderbilt describes in detail several of these bunkers that have now entered public knowledge, or even have become tourist destinations: Project Greek Island, the congressional bunker underneath Greenbrier Resort in West Virginia; Mount Weather, in the same state, designed as an emergency headquarters for the president, cabinet, and Supreme Court; and the North American Air Defense Command (NORAD) Combat Operations Center inside Cheyenne Mountain near Colorado Springs. Vanderbilt concludes from his visits to these sites that counter to the fantasies of early

Cold War films and science fiction, their protected space was actually spartan and functionalist. Of Greenbrier he writes, invoking Le Corbusier's well-worn maxim of modern architecture, "The bunker looks like a factory; survival is its product . . . it was a 'machine for living' of the most literal sort."[27] Nevertheless, despite their lack of luxury, the dispersed federal bunkers afforded personal safety and survival to defense planners and politicians across the nation during the 1950s.

Soon, continuity-of-government ideas spread to other levels of the U.S. political system under the rubric of Emergency Operating Centers (EOCs). These were in many ways the spatial epitome of the national civil defense mission: they would ensure the continuity of social, political, and economic relations by protecting elected and unelected leaders and their activities. An EOC was a place where civil defense, public safety, public works, and social welfare agencies could carry out their mandates during local or national crises, directing rescue work, radiological monitoring, and population control. Beginning in the second half of the 1950s, a program was initiated in which federal government matching funds would cover 50 percent of the construction costs of EOCs for states, municipalities, counties, and regions, so long as they were built according to federally established standards. At the time of its formation, the OCD took over and expanded this program, adding a component of design research and promotion. By 1970, the federal government had funded EOCs for more than twenty-five hundred jurisdictions across the nation. The OCD was careful to distinguish between EOCs and the concurrent public fallout shelter program. First, there was the lack of funding for the latter. Second, the function of EOCs was more complex. Demanding more than mere shelter and survival, EOCs had to allow for continued governance and communications. A longer stay in the protected space also was assumed; usually, thirty to sixty days was projected, in contrast to the fourteen days in a public shelter. Third, because of these different requirements, the OCD believed EOCs needed better protection not only from fallout but also from other effects of nuclear war, such as blast, fire, and social chaos.

For fallout, a minimum PF 100 was required in the design of EOCs, instead of the PF 40 for public fallout shelters. In addition, any EOC in a jurisdiction larger than a small town had to be hardened, or designed "to resist blast overpressure and shock effects." According to the OCD manual for the design, construction, and management of EOCs, blast resistance could be achieved through techniques like "structural continuity" and redundancy. These requirements typically translated into buried box, arch,

or dome structures of reinforced concrete construction. Other blast-related considerations in EOC design included vibration control and "rattle-space" for mechanical, computer, and communications equipment, a goal to be achieved with "flexible construction," that is, pipe and cable connections with some "play" built into them. (The giant springs that support the NORAD structure inside Cheyenne Mountain are perhaps the most compelling illustration of nuclear shock absorption.) In sum, these continuity-of-government bunkers were compelled to be hard and monolithic, yet simultaneously supple and flexible—another, somewhat odd, instance of the ambiguities in civil defense design. Once the structure was hardened against blast and other nuclear effects, there existed one more significant threat to be considered in EOC design:

> All access into the hardened facility must be controlled. In urban areas, this control may pose a serious problem during an emergency and provision must be made to insure that the function of the hardened facility is not compromised by the intrusion of unauthorized personnel . . .
>
> A signal system, operated from the outside, and protected against the design weapons effects, should be provided at the emergency entrance so that authorized personnel, arriving after the installation has been secured, may be admitted. All doors should be secured from the inside.[28]

Emergency Operating Centers would be defensible against the full range of threats: blasts, fires, fallout, natural disasters, and unruly citizens. If these procedures were followed, emergency operations staff could be assured of a safe and calm enclave in which to do their jobs. The OCD *Annual Report* concluded, somewhat self-servingly: "Protection of these people is critical to effective use and operation of the nationwide fallout shelter system."[29] When it came to national survival, central command posts topped the hierarchy of importance.

An early example of a municipal facility, the Portland Civil Defense Control Center, indicates that many of the design criteria for EOCs were established by 1956, the year of its construction. Formed from a reinforced concrete arch buried in an excavated hillside outside the Oregon city, this EOC was opened to great fanfare before one hundred civilian and military witnesses (Figures 6.15 and 6.16). A brass band played as the "Stars and Stripes" was raised over three ventilation shafts and a planar, concrete facade that slashed across a slope of sand fill. If the exterior could be mistaken for a World War II installation of bunkers and pillboxes on an English Channel coast, the aptly named Control Center introduced the

FIGURE 6.15. Portland Civil Defense Control Center, under construction, 1956. Photo no. 4-C-4; RG 397-MA; National Archives, College Park, Maryland.

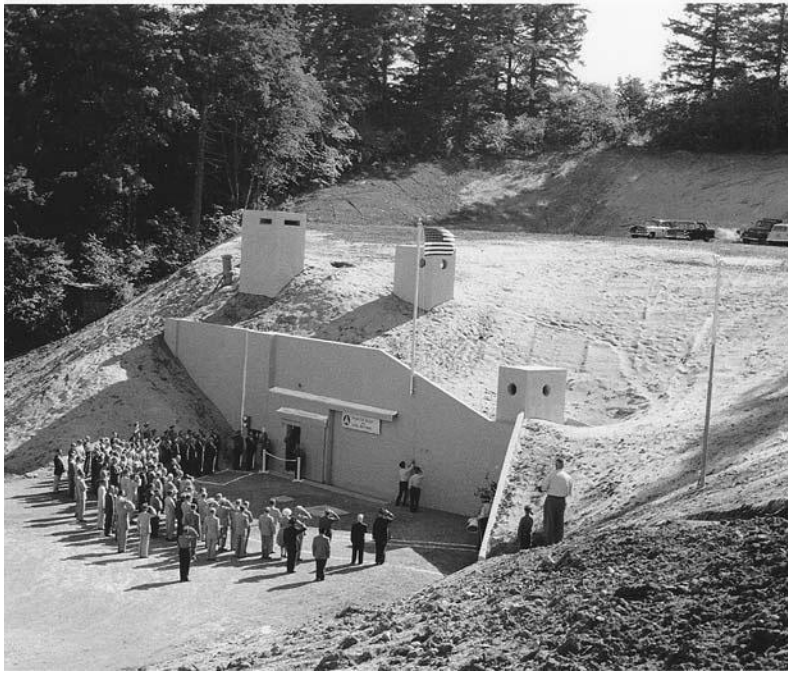


FIGURE 6.16. Commemoration of the opening of the Portland Civil Defense Control Center. Photo no. 4-C-5; RG 397-MA; National Archives, College Park, Maryland.

latest in high-security interior space. In photographs sent to its federal counterpart at the time, the Portland Civil Defense Agency proudly displayed the closed-circuit television cameras used to screen faces and identification cards before entry was allowed to the operations room (Figure 6.17). These details would ensure that the chaos associated with nuclear war would remain outside. Inside, cool heads and rationality would prevail. Ranks of tables arrayed before a constantly updated, ceiling-height map of the city allowed rapid response planning and communication among represented agencies and departments (Figure 6.18).

Emergency Operating Center design in other parts of the United States sometimes encountered more difficult site conditions, as suggested in a report by architect and Coast Guard Reserve Admiral M. Wayne Stoffle: "Providing this most essential facility in undulant or hilly terrain might be more easily solved than in New Orleans where the terrain is flat with the underground water table extremely close to the surface. But, in New Orleans, unquestionably the problem is most stimulating." Stoffle, who oversaw the construction of navigation stations in the South Pacific during World War II, and who also designed the prototype fallout shelter in New Orleans City Hall, certainly embraced the "stimulating" complexities of the EOC architectural program, though he noted with relief that such a problem could "be more thoroughly studied during time of peace than under duress of a crisis." Regretting that so little could be predicted or determined about the size and number of nuclear weapons and their potential U.S. targets, or, for that matter, weather and fallout patterns, Stoffle concluded that "in the design of the physical plant certain assumptions must be made in order to arrive at a parti." If Beaux-Arts language drifts into Stoffle's report (developing the *parti* was the first phase in the method of design promulgated by Paris's École des Beaux-Arts, and its many adherents among architectural educators in the United States, including those at MIT, where Stoffle studied in the 1930s), his EOC project implies that there was room for creative, contemporary design for Cold War bunkers (Figures 6.19–6.21). The precedent of Mississippian mound cultures seems pertinent to the paired cones of Stoffle's 1958 EOC design. However, their graphic presentation and their conformity to the pure geometries of modernism situate them roundly within the aesthetic discourse of the decade. On the other hand, any formal flourishes had to be achieved within government budgets. As Stoffle concluded for EOCs, "Function is paramount, but during times of peace, economy must be considered."[30]

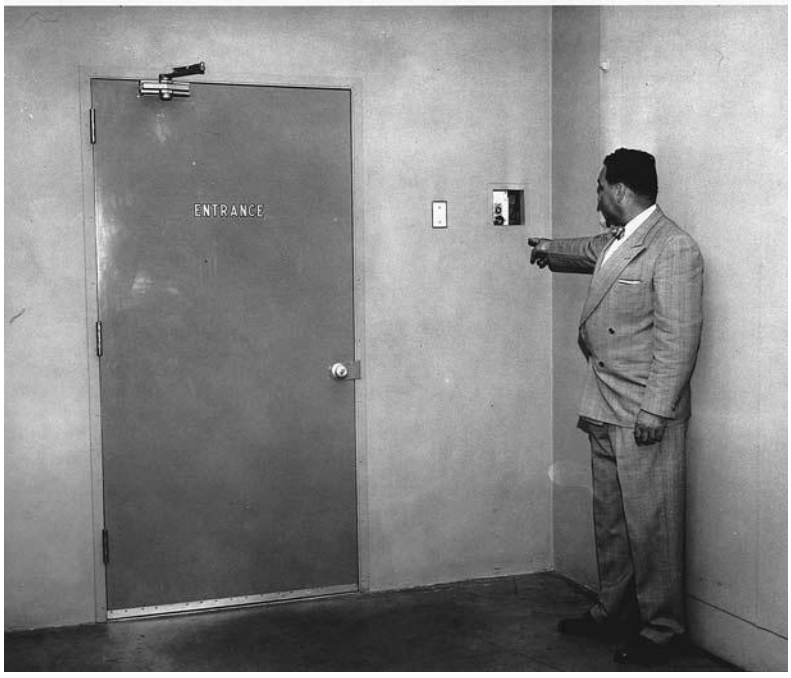


FIGURE 6.17. Portland civil defense official points to the camera used to identify personnel authorized for entry. Photo no. 4-C-11; RG 397-MA; National Archives, College Park, Maryland.

FIGURE 6.18. Portland Civil Defense Control Center operations room, in action for a civil defense exercise called Operation Opal, 1958. Photo no. 4-C-8; RG 397-MA; National Archives, College Park, Maryland.

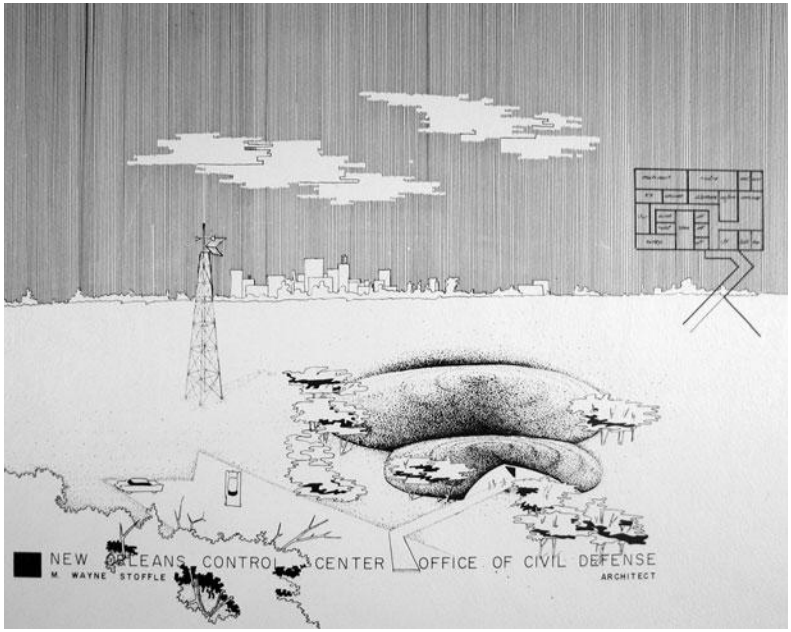


FIGURE 6.19. Perspective of New Orleans Civil Defense Control Center; M. Wayne Stoffle, architect. From an Office of Civil Defense report by M. Wayne Stoffle, *New Orleans Control Center, Office of Civil Defense,* ca. 1958. RG 397; National Archives, College Park, Maryland.

FIGURE 6.20. Plan and construction sections of New Orleans Civil Defense Control Center. Photo no. 4-C-190; RG 397-MA; National Archives, College Park, Maryland.

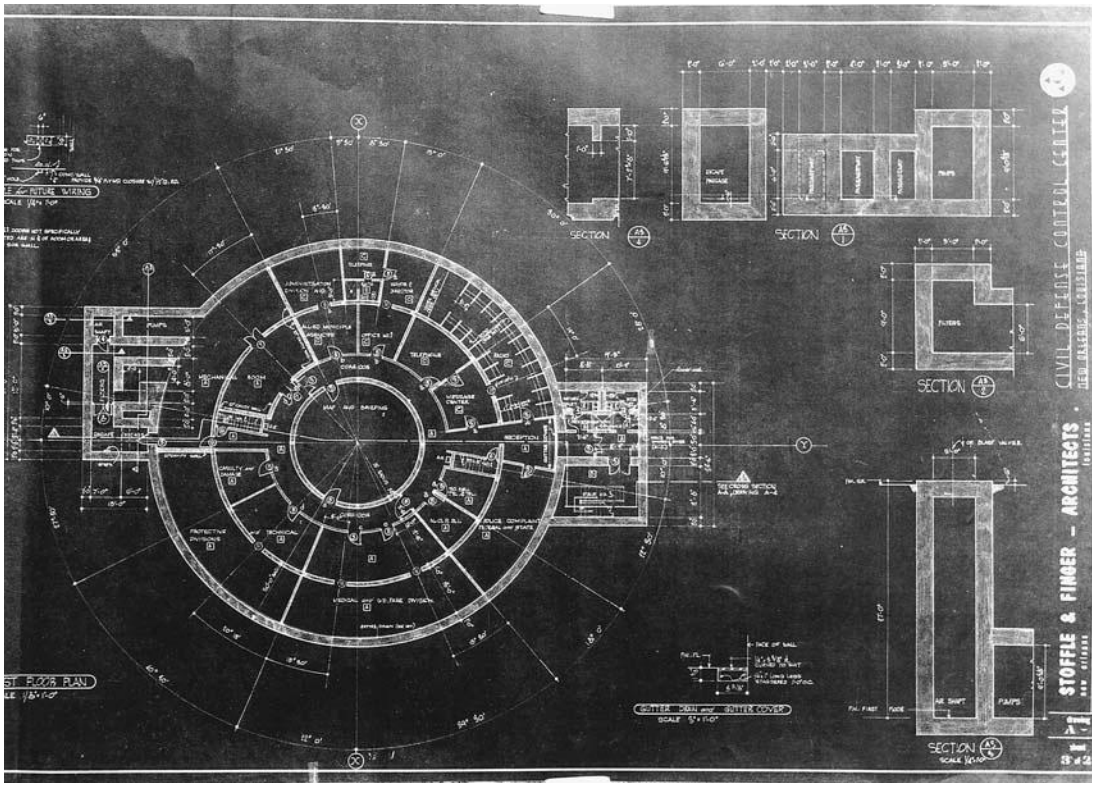


FIGURE 6.21. New Orleans Civil Defense Control Center, as built. Photo no. 4-C-293; RG 397-MA; National Archives, College Park, Maryland.

Other EOCs were aesthetically less compelling. Most were merely basement renovations in existing public buildings, while many others were underground bunkers invisible to the surface denizen. For instance, the tiny, PF 100 EOC built in the basement of the police station in Grand Prairie, Texas, barely had space for five tables and a chalkboard, in addition to the requisite radio room and decontamination shower.[31] Sometimes EOCs made strange bedfellows: in Oakland, California, the Civil Defense Command Center was located underneath the stage of the open-air theater at the Woodminster Cathedral of the Woods in Joaquin Miller Park; one relishes the potential irony of a civil defense exercise being role-played below while *Kiss Me Kate* or *Paint Your Wagon*—both offered during the 1967 summer season—was enacted above. The entrance to the EOC, shaded by flowering shrubs and vines, was directly below a plaque inscribed to the memory of California writers: "To Inspire and Advance the Noblest Aims of Mankind."[32]

Although it arguably was neither noble nor inspiring, the federal Region V EOC in Denton, Texas, did make some ground-level concessions to a contemporary design aesthetic, with glazed cubic forms and a

serrated canopy (Figure 6.22). But by far the largest portion of the building, more than 80 percent of the total square footage, was actually buried underground, comprising an area much larger than the footprint of the surface structure. The latter seems like it was just a nod to the nostalgia for aboveground architecture. Denton's blast-resistant, subterranean space was intended to accommodate OCD officials, plus the "regional offices of other Federal agencies with emergency responsibilities." Additionally, the "center could serve as an alternate headquarters site for the U.S. Government in case such facilities closer to Washington, DC, were knocked out."[33]

While the federal OCD continued to disperse its continuity-of-government facilities to all regions of the continent, state governments necessarily bunkered down in or near their own capital cities, often right underneath their neoclassical capitol buildings, as was the case in St. Paul, Minnesota. The most widely publicized state EOC was that of New York, designed in 1960 by the architectural and engineering firm Praeger-Kavanagh-Waterbury, which specialized in high-tech, Cold War military

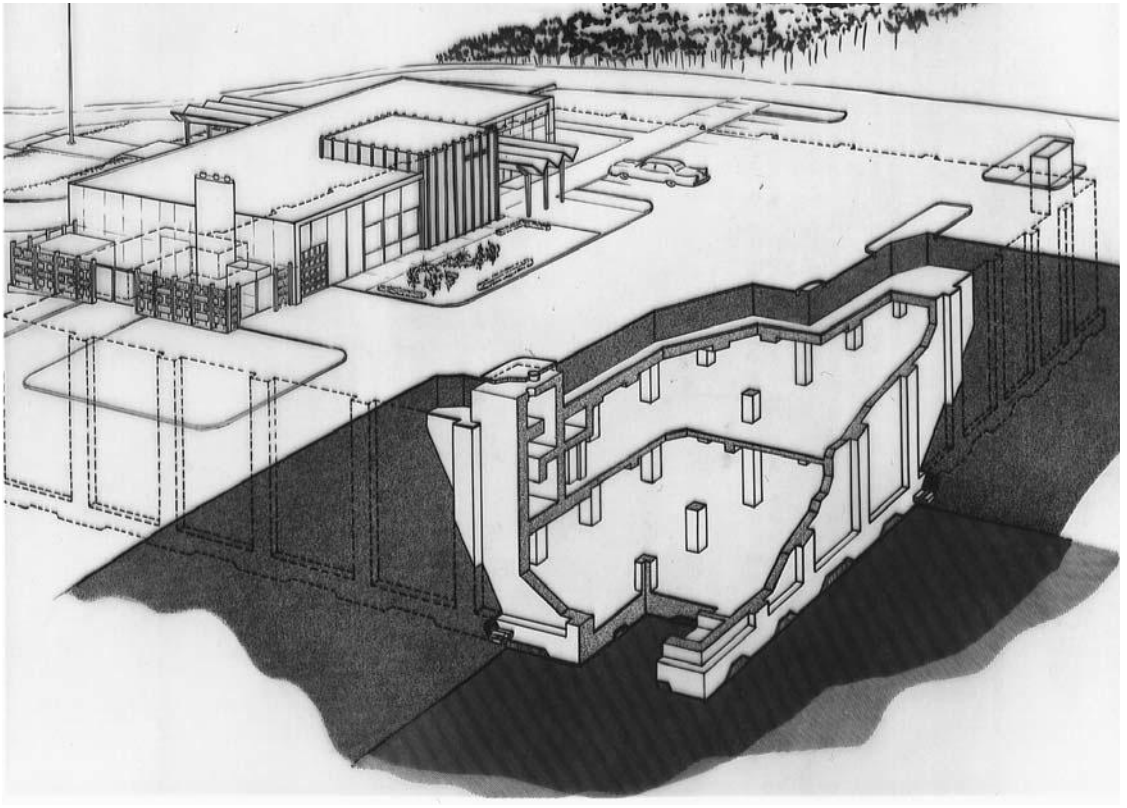


FIGURE 6.22. Office of Civil Defense Regional Emergency Operating Center in Denton, Texas. Photo no. 4-C-120; RG 397-MA; National Archives, College Park, Maryland.

facilities. Under the matching funds program, the federal share of the costs for New York State's Alternate Seat of Government, as this EOC was known, totaled $2 million. Like the Denton EOC, Albany's was a two-story, reinforced concrete bunker buried beneath and beyond the footprint of a standard office building (Figure 6.23). The headquarters of the Civil Defense Commission were located permanently in the subterranean space of the bunker. Other politicians and bureaucrats with emergency operations assignments could access it from the building above through a horizontal blast door that would normally be open during "peacetime operation." Security staff would have screened entrants both here and at the emergency "blast air lock," the latter provided as alternative ingress and egress during the "button-up period." In emergency use, 677 people would have staffed the facility. The structure included an institutional-size kitchen; a clinic; small "VIP sleeping areas" and dormitories for both men and women (numbers calculated on a two-thirds, one-third gender split); a communications hub with telegraph, telephone, and radio station tied into the Emergency Broadcast System; plus three diesel generators to power it all. In all New York EOCs (that is, in county and municipal ones as well), and in many of them across the country, rooms were painted in

FIGURE 6.23. New York State Emergency Operating Center, under a government office building in Albany. Photo no. 4-C-261; RG 397-MA; National Archives, College Park, Maryland.

calming "pastel shades of beige, yellow and green," to help the potential population cope with its stressful responsibilities and confinement.[34]

Decontamination facilities and special air intake filters maintained the safety of those inside the bunker, which provided "virtually total protection against radioactive fallout." All equipment was "shock mounted" and significant blast resistance was designed into the structure, enough supposedly to withstand the equivalent of a two-megaton detonation over Albany itself. The assumption, of course, was that there would be little left topside, while the emergency activities of the center carried on below a twenty-inch-thick concrete ceiling slab. The OCD manual for EOC design and construction honestly captioned a cutaway view of the New York bunker: "Buried box structure constructed as the basement of a frangible office building."[35] Like anyone denied access to the blast-resistant EOC, the office building was expendable. But, regardless of the death and devastation spread across the Empire State, the government was committed to its ongoing existence. In addition to the space allocated to the state agencies we might expect, such as police, public works, and welfare, the New York EOC also accommodated officials from the departments of Audit and Control, Agriculture and Markets, and Education, to ensure the full economic and cultural recovery of the state after a nuclear war.

Although it was not open for public visitation like Albany's prototype fallout shelter, the EOC was not kept secret from the citizenry. On the building's completion in 1963, the state Civil Defense Commission had published the same cutaway view seen in the EOC manual, but this time in a pamphlet for public consumption. Addressed to state residents, the pamphlet reassured them that "from the new below-ground nerve center, the Commission will be able to serve the people of New York with greatly increased effectiveness before, during and after enemy attack."[36] The OCD also advertised the national EOC program as a vital way to protect U.S. citizens. In traveling exhibits that went to state fairs and other large public events, a cutaway model of a hypothetical EOC was displayed against the backdrop of an urban grid marked by columns of smoke and piles of rubble. By depicting the command center's ability to oversee and control crises in the streets, the OCD hoped to reassure the public and its representatives that federal funds were well spent on EOCs. To reinforce this point, the need for secrecy, or even security on the job site, was never mentioned in the detailed construction specifications for EOCs—in contrast to the classified federal government bunkers in West Virginia and other remote locations.[37]

The need to justify the existence of EOCs to the public conflicted, however, with the principles of good design put forward by OCD-sponsored programs. This reflected an ambiguity comparable to that noted earlier for fallout shelter design, where the subtlety of the architectural award winners undermined the rhetorical power of providing protection for all citizens. In the introduction to *City Halls and Emergency Operating Centers,* the charrette publication that was meant to inspire and guide architects in the design of civil defense command posts in government buildings, John Hill wrote: "Some are so integrated into the design of the basic building, and so completely developed as dual-use space, that in the actual building it would be difficult to detect the presence of the Emergency Operating Center without prior knowledge."[38] In fact, this was exactly what civil defense agencies could wish for: that the "prior knowledge" of EOCs reassured the public, but that the public had no idea how to find or access those secured areas.

Although EOCs were publicized as institutions for the preservation of social welfare, it soon became apparent that they also were bastions of social control. Built in response to Cold War geopolitics, EOCs quickly became headquarters for the forces of containment on the home front. Civil rights marches, protests against the U.S. war in Vietnam, and other mass demonstrations were increasingly frequent in the second half of the 1960s. So were episodes of urban rebellion, as inner-city residents reacted angrily to living conditions, police oppression, or national events like the assassination of Martin Luther King Jr. Municipal authorities and police, often reinforced by the National Guard, scrambled to maintain order in their cities. Their actions often resulted in violent clashes with citizens. News coverage of these urban conflicts in visual media often fanned the flames, leading to more strife and damaging the reputation of the city and its government.[39] Emergency Operating Centers were promoted as a solution to urban chaos and confrontations, places where cool heads would prevail, allowing civic authorities to defuse troubling situations. Events could be tracked on the wall maps of EOCs, and emergency services dispatched from the centralized communications hub.

For example, the Mayor's Command Center in Washington, D.C., built in 1968 to replace and centralize the operations of a previous EOC located in suburban Lorton, Virginia, was immediately activated in response to "major accidents, public demonstrations and civil disorders." A glossy, full-color OCD brochure about this Command Center concluded: "The capability of governments to function in peacetime emergencies of every kind can strengthen communities and prepare them to cope with the

ever-present threat of nuclear attack." Crisis planning had come full circle, from nuclear to natural and manmade disasters, then from civil unrest back to civil defense. The brochure's historical summary of civil defense in the nation's capital makes this cycle clear:

> The concept of closely coordinated emergency operations originated in requirements for civil preparedness in event of nuclear attack . . .
>
> In 1962, District of Columbia Civil Defense began to focus on snowstorms as a training device. Experience in plotting potential nuclear fallout patterns helped staff members become adept at plotting the paths and estimating duration of snowstorms . . .
>
> In 1967 . . . the staff began to step up collection of information to help anticipate events that might lead to civil disorder.
>
> This innovation was tested by the civil disturbances which erupted in the District on April 4, 1968 . . . During a week of rioting and disorder, the Lorton EOC continuously monitored commercial radio and TV and public safety communications nets . . . From the information gathered, large-scale maps were prepared to show location of incidents of looting and arson, gathering of crowds, disposition of policemen, firemen, equipment.[40]

The newly minted, central EOC would make it even easier for the mayor to maintain contact among civil defense, public safety services, citizens, and even "demonstration leaders," in order to minimize outbreaks of violence or chaos.

In publishing this detailed brochure, the OCD hoped to impart a specific message: "In increasing measure, the American public demands protective services from government and its leaders."[41] That it chose to publish and promote the EOC in the nation's capital was no accident, as the OCD continued its long battle to convince Congress of the fundable viability of civil defense planning and operations. An opportunity to accomplish this goal arose in the wake of civil unrest experienced across the nation in the 1960s. During the annual OCD program and funding hearings in 1968, the Senate Appropriations Committee was particularly keen to hear whether, in the words of its chairman, Richard B. Russell (D-Ga.), the OCD had "given any consideration just to the manner in which you might be able to help in preventing the plunder and pillage and destruction of our cities by indigenous mobs?" The OCD's representative, Joseph Romm, was ready with an answer to the senator's query:

> Yes sir. We have from the very beginning told local jurisdictions that whatever civil defense assets are available to them can be made available in meeting these kinds of civil disorders . . . Now, they have some real assets to do this

> with. I mentioned the emergency operating centers. These emergency operating centers are really combat control centers or command posts in the military sense for the civil government . . .
>
> In this last series of disorders in April there were 29 cities that either had disorders or thought that disorders were impending. 27 of those had emergency operating centers. Six of them were actually used in those disorders for coordination purposes.[42]

Thus, EOCs were in place to direct military operations in America's inner cities, though their relatively low rate of activation during periods of civil unrest suggested that there was still an ongoing need for OCD coordination, training, and encouragement in their use.

Moreover, it was not just the EOCs that were brought into play during urban rebellions—the fallout shelter program also had an important role in ameliorating the inconveniences of civil disorder. Romm proudly added to his response to the committee: "In the Detroit situation of a year ago, when all the foodstores were actually wrecked and closed up downtown, our food packets, civil defense shelter supplies, were put out on corners so that the people there could subsist." Unfortunately for Romm, this may have been too much information for the Senate committee. The resulting concern of its chairman may indicate another reason civil defense budget requests so often were cut: "There was no way to tell whether you were supplying those [the rioters] who had destroyed the prime resources of consumption?" "No way at all," Mr. Romm was forced to admit.[43] Unlike social welfare programs, which encountered similar difficulties in garnering congressional appropriations, with civil defense there was no way to determine which inner-city recipients of its protection were the deserving poor.

If conservative politicians disapproved of the equity with which crackers might be distributed, public critics of the OCD on both sides of the fallout shelter issue—that is, those who protested the program's very existence, and those who claimed it did not go far enough—early and often pointed out the inequities in civil defense protection. Architect and researcher Robert L. Corsbie was a critic of EOCs in the latter camp. He decried politicians and bureaucrats who only looked out for their own: "While the Federal Government requests civil defense directors to have local control centers blast-proof, it implies that all the citizens need are fallout shelters. This is inconsistent."[44] Corsbie and others were not far off in their estimation of official motives, though civil defense planners were perhaps even more selective than their critics imagined. During a 1962

meeting with one of its EOC contractors, the OCD expressed its desire that "the centers be staffed by professional personnel not titular heads of departments."[45] If this desire could have been acted on, the list of EOC inhabitants would have been limited to civil defense functionaries. Rather than citizens, politicians, or appointees, trained experts would be relied on to uphold the integrity of the nation.

AN ARCHITECTURAL COUNTERCULTURE

Since the early 1960s, architects had been some of the "trained experts" expected to shore up the national edifice through their contributions to civil defense—though, admittedly, no spaces were reserved for them in EOCs. While the theory and practice of design for survival always had been contested within the profession, by the end of the decade the growing culture of civil disobedience evident on the streets of U.S. cities inspired renewed commitment among architects to extricate the AIA from its participation in civil defense. The AIA's relationship with the OCD and, by extension, with its warmongering parent, the Department of Defense, was a particular target for critics. The reopening salvo was fired by The Architects' Resistance (TAR), a radicalized group of students, architects, planners, and draftspersons formed in the fall of 1968 who, in their own words, were "disturbed over the lack of moral and political concern within the design professions." In addition to civil defense, TAR criticized the continued racial homogeneity of the design professions, and the mercenary expansion of American design services into poor and postcolonial nations.

In March 1969, TAR organized an "alternative meeting" to run simultaneously with an AIA-OCD workshop being held at the Boston Architectural Center titled "Design for Nuclear Protection." The official workshop was intended to attract students to Fallout Shelter Analyst courses offered that coming summer. The alternative program, repeated by TAR cells in other cities, centered on viewing the 1965 British film *The War Game,* a fictionalized documentary depicting the horrors of nuclear war and the futility of civil defense. Compared to the twelve people at the AIA-OCD workshop in Boston, TAR claimed an attendance of 150 at its alternative venue. In conjunction with these events, TAR put forth a position statement on architecture and civil defense: "Designing fallout shelters is not the answer; it offers a false sense of protection. Doing so misleads the public . . . If we are really interested in nuclear protection we

should work to end war . . . and stop the fallout shelter program."[46] For these politicized architects, the first step had to be severing ties between the AIA and OCD.

Spurred by TAR and other groups of architecture students, who threatened to picket the 1969 AIA convention in Chicago (raising the specter of violence seen mere months before at the Democratic National Convention), a resolution against civil defense participation was brought before the AIA membership there. Affirming "the belief that the building of . . . shelters contributes to the likelihood of war," a common argument among civil defense critics, the resolution called for the AIA to dissociate from the OCD and its programs.[47] This resolution was deferred at the convention that summer. But over the next two months, the issue played out in "unusually acrimonious" debates among the AIA board over the use of the institute's name on an OCD motion picture intended for architects and other building industry stakeholders.[48] This film was meant to further disseminate some of the winning structures from the first architectural awards program. As AIA staff described it, *Architecture and the Atom* showed dramatically "how architects all over the country have designed buildings with shelter that is not offensive and does not impair the normal use of the building; in fact, one is not aware that the shelter exists until he is told."[49] Since this was "good design," AIA members should have had no grounds for critique. As was often the case with AIA civil defense programs, however, the idea that the shelter was all but invisible, and inoffensive to architectural sensibilities, was in direct conflict with the need to publicize the fallout shelter program. Pointing out these inconsistencies, then AIA president Rex W. Allen and other key members of the board wanted to dissociate the institute from this "misguided" production that, particularly in relation to funding, had "no backup for it in the Federal Building Program."[50]

Meanwhile, as these debates played out within the AIA, OCD officials and architects with close ties to the fallout shelter program met in Minneapolis to strategize, in the words of OCD architect Robert Berne, "how to combat" the "disruptive tactics employed by TAR" and similar groups sprouting up around the country. For example, insurgent groups such as the Young Architects' Power Committee (YAP) in Baltimore had targeted AIA chapter meetings where they were better able to convince smaller quorums that the institute should disaffiliate from civil defense. However, Berne reassured the strategy session that, in the Baltimore case at least, "indications are that this meeting was rigged." A similar inference of treachery characterized the report to the counterinsurgents from a

representative of the Association of Collegiate Schools of Architecture (ACSA). Dr. Murlin Hodgell complained that the ACSA board of directors had held a "secret" meeting and resolved to dissociate from the OCD: "In a somewhat sinister vain *[sic],* it was also noted that the then current OCD involvement had never been officially sanctioned" by the ACSA board. Giving his colleagues the benefit of the doubt, Hodgell concluded that since civil defense "is part of DOD and is subject to the collective emotional response" to the Cold War, and to the hot war being waged in Vietnam, the assembled should recognize that a mass meeting like an ACSA or AIA conference was not the most "advantageous place to counter-sway these emotions with logic lest the OCD programs become more of an issue."

At the Minneapolis meeting, breakout groups workshopped possible counterinsurgency tactics, with a general discussion at the end coming up with short- and long-term solutions. In the short term, the groups presented several ways to ensure resolutions against civil defense would fail at the next AIA convention, for instance, by combining several different hot-button issues in an omnibus resolution. As well, insubordinate AIA chapters might be brought around through increased solicitation of their involvement in local civil defense decision making. In the long term, though, all seemed to agree that the problem was "a study in semantics and location." In particular, the OCD should be relocated outside the defense establishment, perhaps in the Department of Health, Education, and Welfare, or in the presidential Office of Emergency Planning, and fallout shelter design should be tied in with, if not semantically subsumed by, "design for natural disasters."[51] In essence, these counterinsurgents renewed their ongoing strategy to depoliticize and demilitarize civil defense, and to naturalize protective design for national security. These rhetorical and bureaucratic changes to civil defense would begin to be enacted during the early 1970s.

Confirming the sense of resolve exemplified by this two-day meeting in Minneapolis, the OCD refused to allow the AIA to disavow its extensive involvement in the controversial film's production. The OCD *needed* its design programming validated by the AIA's reputation. As James Roembke, director of the OCD's Architectural and Engineering Development Division, pointed out during the negotiations, his organization "considered the AIA as the leading authority on design and logically in a position to produce a film on design." Besides, if the OCD had hired some other contractor for the film, "the AIA would not have had the opportunity to guide the selection of projects which reflect good design and the film might have been released before opposition to the OCD program

developed."[52] According to this logic, the extra filter of good design, insisted upon by the architects, had prevented the timely communication of the civil defense message. After much wrangling, a disclaimer was added to the film stating that the AIA did not endorse or influence OCD policy. Nevertheless, A. Stanley McGaughan opined at the Minneapolis strategy sessions that the disclaimer, in spite of the intention behind it, would "further enhance the prestige of the film since it is to be printed over a background of the AIA seal."[53]

Ultimately, AIA leadership did *not* sever ties with the OCD, even though students brought an even more strongly worded resolution to the 1970 convention. Instead, echoing the language of the film disclaimer, the board resolved to continue providing government agencies with technical advice, without consenting to "endorse, sponsor, or support" programs or policies. Historically, this was no different from existing AIA policy, or from the policy of the Office of Civil Defense's Construction Industry Advisory Committee, which the AIA was instrumental in creating. But this moment did mark the end of the AIA's contracts with the OCD, an intimate aspect of their relationship that had been clearly promotional rather than advisory. In other words, the AIA did change the overtly public nature of its service to national security, while continuing to advise the government.

Despite the controversies that characterized the institute's participation in the fallout shelter program, AIA staff had no sense of regret. By this time, the AIA had recognized fully the significance of an advisory role to the highest levels of federal bureaucracy. In particular, it credited the ongoing work of the Construction Industry Advisory Committee with the extension of architectural functions in other federal agencies, such as Housing and Urban Development, Health, Education, and Welfare, and the General Services Administration, which by 1969 had all "established advisory committees upon which AIA is well represented."[54] In forbidding the AIA to withdraw its association with the film, OCD director Roembke presented the thinly veiled threat that if the AIA backed out of its commitment, it would "jeopardize the excellent relationships" it had "with other governmental agencies which have resulted from cooperating with OCD."[55] Its skirmish with the architectural counterculture taught the AIA that its ongoing relationships with government would need to be finessed. To maintain its public status as an independent body of experts, not beholden to the machinations of the state, the AIA had to be more careful about what it put its name on.

CONCLUSIONS

For the most part, students and others critical of civil defense in the late 1960s protested the profession's participation in the program, and the broad implications for world peace, rather than the design and construction of fallout shelters per se. Despite all the OCD publications, purpose-built shelters were not prevalent enough to justify picketing. There were perhaps a few hundred buildings across the United States designed to incorporate fallout shelter, compared to more than one hundred thousand that were surveyed and marked to indicate their inherent accommodation of fallout shelter. Finding more of this inherent shelter in new buildings, especially in deficit districts, was the key aspect of shelter survey updates, now conducted by teams of architecture and engineering students. It remained for local civil defense officials to follow through and have these new shelter spaces marked and stocked. By the end of the decade, though, federal funds for crackers, water canisters, and commodes had dried up. The relatively cheap alternative of publicity became increasingly important to the OCD and its successors. Much was riding on the ability of architecture to communicate the civil defense message.

In the bunker architecture associated with civil defense, the presence of the fallout shelter and its signage was the basic and explicit statement of the program's intent. But since few fallout shelters were paid for by clients, governmental or otherwise, the long-term success of the civil defense project relied on a broader, cultural association of architecture with protection. If fallout shelter was inherent in the design of many new and existing structures, perhaps meaning could be too. By examining the detailed case study of Boston City Hall, which pioneered many architectural and representational aspects of a bunker architecture, the final chapter will explore how meanings were produced by, and crystallized upon, one prominent building.

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7. BUNKER ARCHITECTURE FOR THE COLD WAR

Boston City Hall

Among architects, urban designers, critics, and politicians, one of the most cele-brated new buildings of the 1960s was Boston City Hall, designed by Kallmann, McKinnell & Knowles (Figure 7.1). The design was chosen from a national competition held in 1961–62, the first such competition for a major public building in more than fifty years. After the well-publicized competition, and since the completion of the building in 1969, architects, critics, and historians have hailed the widely published project as a paradigm for any number of rediscovered architectural characteristics: monumentality, solidity, authenticity, expressiveness, and urban public space.

FIGURE 7.1. West facade of Boston City Hall; Kallmann, McKinnell & Knowles, architects. Faneuil Hall is in background, with portion of plaza in foreground. Library of Congress, Prints and Photographs Division, Historic American Buildings Survey, HABS MASS, 13-BOST,71-1.

Standing alone amid a large paved plaza, Boston City Hall is composed of rows of concrete louvers, bold and varied articulations of concrete planes, and opaque redbrick masses that reflect the surrounding built fabric that survives around its historic downtown site. The design for Boston City Hall was widely disseminated, and it became something of an icon among North American public buildings of the era, winning an American Institute of Architects Honor Award after its opening.

For the most part, however, the broader public—whether elected officials, city workers, journalists, or people interviewed on the street or plaza—has not been effusive about Boston City Hall. Outside architectural culture, objections to the unveiled competition winner and to the completed structure ranged from appearance to experience, and from materials to meanings. Three years after the building's opening, a lengthy vox populi review exposed some of these feelings. Those interviewed described City Hall as "overbearing" and "cold," while one female visitor declared, "It's ugly, it's dirty-looking, it's so dark inside." Another bystander, summing up the era of Boston City Hall's competition and construction, explained that it "came from the time of the many fallout shelters."[1]

Whether referring to the building's aesthetics, its politics, or perhaps the pertinent fallout shelter signage posted on the building, this lay critic was correct. The period of the Boston City Hall project paralleled the most active era of U.S. fallout shelter programs. In fact, springing from the architecture profession's excitement about the competition and building, the federal Office of Civil Defense (OCD) singled out City Hall as an example of good design according to the specific criteria of radiation protection and continuity of government. An OCD publication detailed in plans and sections the areas of Boston City Hall that offered adequate fallout protection and noted that the building was stocked with federally supplied food and water to accommodate the survival of almost twenty thousand citizens after a nuclear war. Moreover, the OCD enthused that the bowels of the building contained a hardened Emergency Operating Center designed to ensure the municipality's continued operation during all types of crises.

Civil defense strove to be an ongoing demonstration of social welfare planning, of how the state opens up certain democratic options to citizens and offers them the multifarious protections of the social contract. At the same time, the state exerts the authority to limit those options and make social demands on its citizens. Buildings like Boston City Hall help communicate those options and demands. In their own statements about

the building, the architects stressed both the monumental and democratic aspects of their design—one of them defined it as "democratic monumentality."[2] They declared that they had scaled the monumental public spaces like monarchical baroque plazas but had given them an openness and flow that paralleled the accessibility and flexibility of American democracy. Using similar terms in his survey of *Modern Architecture since 1900,* the architectural historian William Curtis described the design problem for Boston City Hall as giving "a suitable civic character to an institution whose identity seemed to imply both authority and openness."[3] The designers and patrons of Boston City Hall conformed to the mandate that public buildings welcome and shelter the activities of good citizens. Nevertheless, the architecture forcefully demarcated the boundaries between the activities of the state and a threatening outside, characterized as much by unruly masses as by the effects of nuclear war. Addressing Boston City Hall in her recent survey of U.S. architecture, Gwendolyn Wright is less sympathetic than Curtis, differentiating between the architectural *intentions* of public accessibility to government and the *results:* a building that "suggested a fortified barricade and the weight of authority."[4]

Like military bunkers, public buildings of the 1960s and after evoked both hunkering down against attack and an outward-oriented surveillance of terrain. Of course the architects—and the civil defense officials as well—would have been horrified to imagine or promote Boston City Hall as a bunker. But the architects' descriptions of their design intentions, and the narratives of architectural culture more generally, played a relatively small role in the building's public reception. Rather, studying architecture for civil defense as a discursive formation that extends well beyond architectural culture affords, in the words of social theorist Paul Hirst, a method "to discount 'intentions,' to consider structures in their forms and in their effects and not merely through their originating 'ideas.'"[5] The first half of this chapter considers how Boston City Hall was represented, perceived, and experienced by the public, the architectural and popular press, government officials, and by the architects themselves. In the second half, this reading of the building's reception is correlated with the particular concerns of the Cold War and civil defense. Like any public building, Boston City Hall was engaged in multiple conversations, including the widespread 1960s debate concerning national security in an atomic age. How did these diverse activities and actors shape the meaning of Boston City Hall and other buildings like it during the early Cold War? The deployment of this mode of architecture extended the logic

of bunkers to everyday public buildings, and associated these structures with a Cold War conceptualization of "shelter," for the purposes of civil defense. Ultimately, as the epilogue suggests, the bunker architecture of the early Cold War began a mode of fortress urbanism that continues to shape cities today.

SHAPING CITY HALL

From its conception, City Hall was to be the focal point for a large section of Boston's old downtown, redeveloped according to an urban renewal plan initiated in the mid-1950s. In 1961, architect I. M. Pei—supported by a host of consultants that included the prominent urban designer Kevin Lynch—was hired by the municipal Boston Redevelopment Authority to be responsible for the overall plan of the district's program, land parceling, open spaces, and building volumes.[6] The urban renewal area became known as Government Center, a complex of institutional and commercial structures sitting on sixty acres of real estate. In addition to City Hall itself, key aspects of the plan were a federal government office tower by the Architects Collaborative (begun in 1960) and a new State Service Center overseen by architect Paul Rudolph (completed in 1970). Coordinating the urban renewal plan was the Government Center Commission, made up of municipal officials, building professionals, and business leaders. It was this commission that recommended and conducted a national competition for the design of City Hall, to show that Boston was not "lying dormant but is ready and willing to modernize."[7]

The commission announced the competition on October 16, 1961, and documents were distributed to all American architects with a December deadline for the first submissions. By the following February, a jury had narrowed down the 256 entries to eight finalists. The jury consisted of Harold D. Hodgkinson, chairman of a Boston department store, plus four distinguished architects and architectural educators from across the country: Ralph Rapson, Walter Netsch, William Wurster, and Pietro Belluschi. The architectural adviser for the competition was Lawrence B. Anderson of the Massachusetts Institute of Technology. For the final stage of the competition, two additional Boston businessmen were added to the jury: O. Kelley Anderson, president of an insurance company, and Sidney Rabb, head of a supermarket chain. Although no elected representatives, civil servants, or other citizens served on the jury, the addition of local businessmen was meant to lend practical credibility to the process.

The winning solution by Gerhard Kallmann, Noel Michael McKinnell, and Edward F. Knowles was unveiled on May 4, 1962. The German-born Kallmann and British-born McKinnell were design instructors at Columbia University at the time of the competition. They had both studied architecture in England before immigrating to the United States to teach and continue their studies. The American Knowles, educated at Pratt and with several years' design experience with prominent New York architects, was the only member of the trio who was a registered architect at the time of the competition, having gone into private practice a few years earlier. Kallmann and McKinnell, the two lead designers on the entry, relocated to Boston to take up the commission. Delayed by injunctions, strikes, and a building contractor inexperienced with the particular type of concrete work required by the innovative design, construction stretched over the next seven years.

As built, Boston City Hall is characterized by cubic masses in red brick and gray concrete. A rectilinear midspace mass, the building commands a large, irregularly shaped, paved plaza that drops in elevation from west to east. The lower stories burrow into the slope of the site. Each facade of Boston City Hall is differently articulated, the two principal elevations being the west, projecting into and over the main portion of the plaza, and the east, towering over Faneuil Hall, Quincy Market, and their picturesque neighbors. The north and south facades are somewhat narrower versions of the main facades (Figure 7.2). A consistent entablature wraps around the entire structure such that, in the words of Sibyl Moholy-Nagy, "from any approach the four dissimilar façades . . . transmit a concept of harmonized contrast."[8] Following the architects' own description, critics and historians typically note that the design conforms to a tripartite organization based on program (an ordering already established in detail by Pei and Lawrence Anderson before the competition documents were distributed): public access departments in the lower levels, denoted by brick floors and blank facades; ceremonial spaces of elected government, such as the council chambers, in a middle section marked by an expressive exterior treatment of irregular, projecting hoods in exposed concrete; and finally, the less public offices of the municipal bureaucracy behind the repetitive concrete grids and recessed windows of the upper stories.

The seven-story west facade (see Figure 7.1), which shelters the main entrance to City Hall, is composed of brick ramps and parapets that rise out of a plaza made from the same material. Above and behind these brick elements, a series of tall concrete planes is set perpendicular to the

FIGURE 7.2. North facade of Boston City Hall. Library of Congress, Prints and Photographs Division, Historic American Buildings Survey, HABS MASS, 13-BOST,71-4.

plaza so that their edges hint at a classical colonnade. Breaking up the rhythm of this colonnade, two concrete hoods project into the foreground to mark the entrance, council chamber, and councillors' offices. Finally, the three-story entablature is made from marching concrete louvers, capped by a broad concrete cornice with geometric bas-relief patterns suggesting the triglyphs and metopes of a classical temple. Lower levels of this facade are carved away, leaving darkly shadowed spaces. The three attic stories each project increasingly outward over the one below it. Closer in to the base of this facade, the overhang of the attic stories is augmented by the deep hoods of the entrance area, giving the building the mien that some have found "overbearing."

Because of the substantial change in elevation over the site, the east facade of Boston City Hall (Figure 7.3) seems precipitously high in relation to the streetscape and marketplace it confronts. Again, the edges of vertical concrete planes and the louvers of the entablature lend a rhythm to this facade, which is broken up by protruding concrete hoods, the most dramatic of which frame the mayor's office with L-shaped forms. Some commentators argue that the brick mound that forms the lower, northeastern

FIGURE 7.3. East facade of Boston City Hall, from the northeast. The windowless brick masses in the foreground characterize the streetscape, while the exposed concrete upper stories tower above. Photograph courtesy of Garrath Douglas.

portion of this facade is aligned, in scale and material, to its historical urban context. From the base of the building, however, this windowless, four-story brick wall, with a third-story overhang, reads like an inaccessible rampart—or, as renowned architect, author, and educator Donlyn Lyndon wrote, "a drear blank cliff"[9]—surmounted by five more stories of concrete that project increasingly outward. To the left (or south) of this cliff face, a deep cavernous opening recedes between towering vertical planes—it shelters access to an unceremonial public entrance at the basement level (officially the first floor), plus a small garage for city executives. A separate mayor's entrance, elevator, and parking stall within the garage afford this personage "adequate escape routes," in the words of a 1969 review by *Interiors* magazine.[10]

The main public ingress, though, is through the west portal off the large plaza at the third level. The plaza's slope, its radial paving pattern created by contrasting gray stone steps and redbrick pavement, and the

continuation of this brick into the foyer, were meant to funnel citizens to the entry. Today, this effect is enhanced because the north and south entrances off the plaza are permanently closed to simplify security measures. At the main entrance, shallow brick steps up from the plaza lead into a porch; sheltering this area is an inverted concrete stair, the exterior expression of council chamber seating (see Figure 7.1). Passing into the lobby (today, this movement is governed by metal detectors and bag searches), a visitor is met by the broad and grand central stair mound, "an escalier worthy of Piranesi," according to *Interiors* (Figure 7.4).[11] This rises in stages to the middle sections of the interior, where the council chambers and other spaces of democratic representation are located. Dramatic light wells flank the public stair mound, offering a sense of vertical openness and giving the space the character of an atrium. A secondary, sculpturally curved, concrete staircase projects into this central space from the east like a series of stacked pulpits (see Figure 7.18). From the lobby, a passage to the north leads into a multilevel, public concourse. Wickets and glass doors in this concourse indicate city departments with which citizens interact on a regular basis, paying taxes and fines, applying for licenses, registering

FIGURE 7.4. Public lobby of Boston City Hall. Library of Congress, Prints and Photographs Division, Historic American Buildings Survey, HABS MASS,13-BOST,71-9.

complaints, and so on. Like most surfaces in the building, even the counters where citizens might lean or set their bags are of exposed concrete.

The rectilinear order of the concrete waffle slab forming the ceiling of the atrium and concourse suggests the limits of public access—on top of the slab sits those offices of the city's bureaucracy that receive few visitors, as determined in a 1959 space planning report.[12] These offices, which occupy the sixth to ninth floors, are arranged around an open courtyard that extends up through them; this opening is offset to the north from the public atrium of the lower floors, contributing to the complex section of the building. Office spaces are characterized by the exposed concrete columns, beams, louvers, and waffle slabs, which lend an ordered—and by many accounts—inflexible regimentation to the work spaces.[13]

While the clients and architects of Boston City Hall intended grandeur, efficiency, and openness, many others who have viewed, visited, or worked in the building have registered their own, often very different, experiences of the space. For example, countering the concept of an accessible, open public forum, lay critics pointed out that the new council chambers were smaller than those in the nineteenth-century City Hall that was being replaced.[14] Certainly, the much-touted legibility of the program's tripartite organization has never read well on the ground. As a sympathetic commentator wrote in 1971, City Hall's "organization tends to be very confusing . . . with each entry at a different level."[15] Further, the north and south elevator cores do not access all the same floors owing to the sculptural carving away of building volumes. For instance, there is no fourth floor accessed from the south elevator core—the fourth floor only exists as a small disconnected space in the northeast corner of the building's footprint, and the portion of the fifth floor directly above it is mostly void. Since the opening of the building, handwritten signage posted by frustrated employees has attempted to supplement official directions in the hope of clearing up the confusions of visitors.[16] In sum, the lived experience of Boston City Hall conflicts with the abstract representations of openness and legibility referred to by its architects and other defenders. These conflicts can be traced through the different discourses of the building's reception.

REACTING TO CITY HALL

Architectural critics writing about Boston City Hall in the 1960s generally embraced the winning design, appreciating its nod to precedents, its position in the teleology of modern architectural history, and its purported

"humanism." Comparisons ranged from ancient to medieval monuments, and followed the architects' paths from St. Peter's Square in Rome to Le Corbusier's La Tourette monastery in rural France. In the words of Walter McQuade in *Architectural Forum,* the winning entry shared the Bostonian "robustness" of H. H. Richardson's Trinity Church and projected a building that "in the humanity and diversity of the succession of spaces housed inside . . . may be very impressive."[17] Seven years later, in an extensively illustrated review of the completed structure, Sibyl Moholy-Nagy effusively described the "chiaroscuro" of the lobby lighting and the "superb awareness of spatial depth" that resulted in a "unique architectural experience." But, as in much writing about the building, and about modernist architecture more generally, Moholy-Nagy recognized the need for a "user who is willing to understand its intentions and solutions." She concluded:

> The highest meaning of the new civic centre will come not from monumentality but from a gradual awareness of its profound humanism by the citizens . . . City people are unschooled in environmental observation and it might need systematic guidance to make them aware of the many delights that this new civic centre provides. These delights, [lift] anonymous men above the stupefying spacelessness of their habitat.[18]

The citizens of Boston were less inclined to receive the building with a similar sense of optimism. They remained as ignorant of its "humanism" as they were of its role in architectural history and theory. The dichotomy between the building's reception by the general public and its reception by people "who know more about architecture than others," goes back to the unveiling of the winning entry at Boston's Museum of Fine Arts.[19] If architectural writers waxed eloquent about the appropriateness of the City Hall design to Boston's built fabric or to the existential angst associated with the contemporary city, many Bostonians were unreceptive to these claims. For those viewing the competition model and drawings in 1962, their discomfort closely revolved around issues of identity: "But is it really 'Boston'?" asked *Architectural Forum.*[20] Or was it appropriately American? Reportedly, when the mayor unveiled the nontraditional winning entry, "surprise was evident in every line of his face."[21] Some of his constituents complained that the design was "too modernistic" to represent the historic city. One Bostonian, commenting on the diagonal, concrete staircases that slash across the main facades of the building, said "they look like Lenin's Tomb," classifying them as quintessentially un-American in the context of the Cold War.[22] The most common criticism,

coming from city council members and the general public, was that the design looked too "Oriental." This nonspecific, racialist epithet was used to make comparisons to a Chinese pagoda, a Babylonian temple, "the tomb of Cheops," and other structures.[23] As the architectural adviser to the competition, Lawrence Anderson, said in defense of the jury's selection, "I've heard it called Greek, Romanesque, Japanese, and Aztec . . . This just shows that the qualities of monumental architecture are similar all over the world and through time."[24] Despite his reassurances, whether Boston City Hall was seen as too alienating, too militaristic, too modern, or too non-Western, the implication was that it was threatening in its foreignness. The building's perceived inappropriateness to local identity paralleled its questionable national origins, and Boston City Hall became a node within a Cold War discourse about the boundaries between American and un-American architecture and activities.[25]

Upon its completion, there was a perceptive anxiety among citizens that Boston City Hall symbolized myriad threats to their everyday existence. The building itself seemed a menace to its environment. Several publications echoed *Time* magazine in reporting that "to most citizens, it looked too fortresslike for comfort."[26] According to the *Boston Globe* souvenir edition produced for City Hall's grand opening, one "old timer" complained nostalgically: "The old place was comfortable—an old shoe—but this one is cold. It's like working in the Under Common garage." This was a fortuitous simile: the "old timer" likely was aware of a succession of diverse plans publicized in the 1950s and 1960s for incorporating bomb or fallout shelter for up to one hundred thousand persons in the parking garage under Boston Common.[27] Critics have not been limited to cranky senior citizens. Even the most recent monograph on Kallmann and McKinnell openly admits that City Hall was "a building whose sources lay in the private subculture of modernist architecture . . . Members of the public tend to regard it as aggressive and intimidating, isolated from its surroundings in its vast plaza, and lacking the texture, color, and detail that invite one to move closer to the building."[28] Summing up the negative feelings, historian Lawrence Kennedy recently wrote that the new City Hall has always been "the building that Bostonians love to hate."[29]

HISTORY OF THE CRITICAL DIVIDE

The competing interpretations of Boston City Hall on both sides of the critical divide were put forward in relation to social, emotional, political,

and professional discourses that strongly influenced the possibilities and meanings of what was said. Historians have tended to reduce designers' concerns about comprehensive problems to a genealogical narrative of formal solutions, as seen through canonic examples. As a result, architectural history often has ignored the broader implications of modern anxieties, or the meanings of forms outside of a specific discourse of architectural modernism.[30] In manifestos he had published prior to the competition, Kallmann established the parameters for many later interpretations of Boston City Hall that were grounded in the category of architectural style. As an extension and modification of Brutalism, a style then acclaimed in Europe, he described an architecture of "compositional rigorism" whose "most influential representative" was "the Philadelphian Louis Kahn." This architecture resulted from the generation of individually articulated parts and masses through the design process and program—as in Kahn's formal differentiation of laboratories and utility towers in the Richards Medical Research Building, then under construction at the University of Pennsylvania. According to Kallmann, with a greater regard for new technologies and a "more disciplined compositional aspect" than its European models, rigorism had "developed with special force under dynamic American pragmatism."[31] By specifically situating Kahn in the first national capital, Philadelphia, and channeling the American pragmatist philosophers, Kallmann—a European by birth and training—here attempted to define the context for an architecture suitable to American identity. Taken up by much of the architectural writing about Boston City Hall, Kallmann's words shaped a significant aspect of the discourse about the appropriate character of its design.[32]

Following this lead, critics and architectural historians have focused on the formal influences for Boston City Hall and other massive concrete buildings of the 1960s United States. Aesthetically, there are explicit parallels between City Hall and La Tourette (1955), a widely influential essay in the modernist architect Le Corbusier's postwar embrace of *béton brut* (raw concrete). This widely published and visited structure of exposed rough concrete sported massive windowless facades contrasting with repetitive cells of recessed openings, and wedged itself into its sloping site. Like City Hall, La Tourette was composed of a rough concrete exterior wall protecting an interior cloister. Along with the similarly concrete and cellular Unité d'Habitation in Marseille (1947–52) by the same architect, La Tourette demonstrated a new approach. The roughness and solidity of these buildings stood in contrast to the purist white and glazed forms, and

artificially smooth surfaces, of a prewar modernism that had been championed by Le Corbusier and others, particularly those associated with the Congrès Internationaux d'Architecture Moderne (CIAM), the prominent advocacy group.

Recognizing the lack of love among the general public for the purist forms of early modernism, at war's end many members of CIAM began to call for an architecture that communicated better to the individual and the community. These appeals took several shapes within CIAM and without. Sigfried Giedion, secretary of CIAM and friend of Le Corbusier, spoke of the need for a "new monumentality" that would be able to engage democratic collectives in a communal identity, without resorting to the traditional forms of architecture exploited equally by the totalitarian and social democrat regimes of the 1930s and 1940s. In its proposal for an architectural monumentality, as opposed to sculptural commemoration, this position was related to the living memorial movement widespread among cultural commentators at the time. For his part, Louis Kahn argued that new materials developed during wartime would be appropriate to expressing communal identity for industrialized, democratic postwar societies.[33] At this point, neither Kahn nor Giedion was exploring the possibilities of exposed concrete or imposing masses—both proposed modes of light construction, a combination of welded steel frames, plastics, fireworks, and electric lighting to effect this new monumentality. Nevertheless, in describing Boston City Hall as a form of "democratic monumentality," Kallmann channeled this postwar debate as justification for the boldness of the design.

In the meantime, a generational revolt within CIAM during the 1950s, led partly by British architects Alison and Peter Smithson, argued for an architecture that more authentically expressed its materials and its relationships to existing social contexts and urban fabrics. Team X, as they came to be known, pointed to the postwar work of Le Corbusier—one of CIAM's founders—as a model for these more authentic forms. For example, the Unité d'Habitation holds pride of place in critic Reyner Banham's famous exposition on "the New Brutalism," an architecture he described as striving for the authentic exposure of "brute" building materials and systems—for both aesthetic and ethical reasons. In the words of the early Brutalist manifestos, materials, like sites and societies, were best used "as found," according to their true appearance and relationships.[34] Eliminating finishes like plaster or cladding would expose the truth of a building's construction and materiality. (It also offered particular cost savings in the

context of postwar reconstruction and the expansion of welfare state institutions.) Concrete, in its affordability, ease of construction, and textural qualities, became a popular material for Brutalist architects to specify. As a challenge to a dominant, moribund, and by now commercialized International Style of early modernism, solids, solidly sitting on the ground next to existing streets and buildings, would replace glass curtain walls, *pilotis,* and aloof relationships to site and urban context. The British-trained architects Kallmann and McKinnell were steeped in this heady brew of revolutionary formalism, which infused their entry to the Boston City Hall competition.

In these narratives, then, buildings like Boston City Hall participated in a genealogy of the European modern movement traced back through the postwar reconfigurations of, and generational revolts from, the orthodoxies of the early modernists. The implication is that formal decisions are made by architects more or less exclusively in relation to key themes of a debate and a lineage framed by the architects themselves. Even in one of the few substantial historical studies of architecture and war, Keith Mallory and Arvid Ottar question the validity of tracing a line of influence or inspiration between wartime bunkers and the architect-designed buildings of the 1950s and 1960s. For them, it can be seen only as an "interesting coincidence" that Le Corbusier's famous postwar buildings like La Tourette and Unité d'Habitation were begun soon after the liberation of a Nazi-occupied France in which "the textural possibilities of rough boarded concrete were so clearly indicated in its bunkers."[35] Because bunkers were engineered structures produced by military bureaucracies, no connection could be made between their meanings and the formal intentions of modernist architects—at least not without the architects saying so themselves. For cultural theorist Paul Virilio, though, the expressive and aggressive forms of postwar architecture need not be seen as original or avant-garde against the background of World War II bunkers. Virilio asks, in looking back at the history of fortifications, "Why continue to be surprised at Le Corbusier's forms of modern architecture? Why speak of 'brutalism'?"[36] Speaking of these buildings as mere iterations of a formal solution to design problems deflects attention away from the broader culture and politics of postwar architecture. Virilio's more significant argument concerns what he calls the "mythic dimension" of total war. Protection and survival are no longer guaranteed by distance from the front: "retreat was now into the very thickness of the planet and no longer along its surface . . . [all of this is] present in the meaning of the concrete

mass built to hold up under shelling."[37] The point is not that Le Corbusier may have been inspired formally by the *Atlantikwall* but that the meanings that would attach themselves to *béton brut*—and to a bunker architecture—would be forged in a culture of war, whether hot or cold. That is, meanings are produced within, and circulate among, multiple discursive formations and cannot be studied solely in relation to the formal categories of architectural culture.

Some architectural writers during the early Cold War seem to have understood a broader context for design. For example, in their 1961 survey text, Boston-based educators John Ely Burchard and Albert Bush-Brown devoted an extended discussion to the postwar "doom sense" to which "architecture could find no fitting answer."[38] As well, the widely disseminated writing of Bruno Zevi, an Italian architectural historian exiled to the United States during his country's fascist era, was haunted by apocalyptic visions. Describing the uninhabited rooms and furniture typical of architectural photography, Zevi evoked ghostly spaces that "appear to be . . . left standing after the destruction of the human race." Looking back over two world wars, Zevi grounded his apologia of modern architecture in the belief "that the very existence . . . of our architectural culture depends on the solution of our present problems."[39] Modernist architects always had been idealistic about finding comprehensive design solutions to social, political, and global problems. But even a range of issues as broadly defined as the Cold War—let alone the geopolitical nature of Boston City Hall, or of bunker architecture—has had little effect in the subsequent historiography of twentieth-century architecture.

In contrast to the aesthetic and genealogical approaches to architectural history, bunker architecture has been much maligned within a separate stream of scholarship that engages in the social criticism of architecture. Often inspired by 1960s and 1970s critiques of public space such as those by Jane Jacobs, William H. Whyte, and Richard Sennett, this approach sees that era's architecture as representing the nadir of the American civic realm. In this vein, Sennett characterized the "dead public space" of the era as a result of social isolation by design.[40] Vincent Scully's 1960s scholarship on American architecture might be seen in this grouping; indeed, while he begrudgingly allowed that Boston City Hall may represent a minimal level of "competence in urban design," even there "one feels that civilization must have already ended." Not ended, perhaps, but certainly under threat; to protect it, a muscular architecture was deemed necessary in the 1960s, an approach Scully famously termed "paramilitary

dandyism."[41] Another doyen of architectural history, Nikolaus Pevsner, wrote that Boston City Hall was "oppressively top-heavy and forbidding rather than inviting." For Pevsner, the "domineering" City Hall and buildings like it "evoke aggression and a cyclopean brute force."[42]

In their influential histories, Scully and Pevsner refer to Boston City Hall in the same breath as buildings such as Roche Dinkeloo's Richard C. Lee High School in New Haven (1966; a "pillbox" according to Scully) and Ford Foundation Headquarters in New York City (1967); Mario Ciampi's University Art Museum (1970) at Berkeley; Johansen's Goddard Library at Clark University (1965–69); as well as Paul Rudolph's Yale Art and Architecture Building in New Haven (1962) and State Service Center in Boston (1964–70), which was part of the same urban renewal project as City Hall. The State Service Center is a connected group of three buildings/wings arranged around a large, paved courtyard—each of them housing different departments of Massachusetts's welfare system (Figures 7.5 and 7.6).[43] Grids of long, blank, horizontal, exposed concrete planes form the facades of the center; these planes sit ahead of the windows below them, creating dark, protective overhangs. This defensive effect is emphasized as

FIGURE 7.5. State Service Center, Boston, Massachusetts; Paul Rudolph, coordinating architect, and others. Photograph by the author.

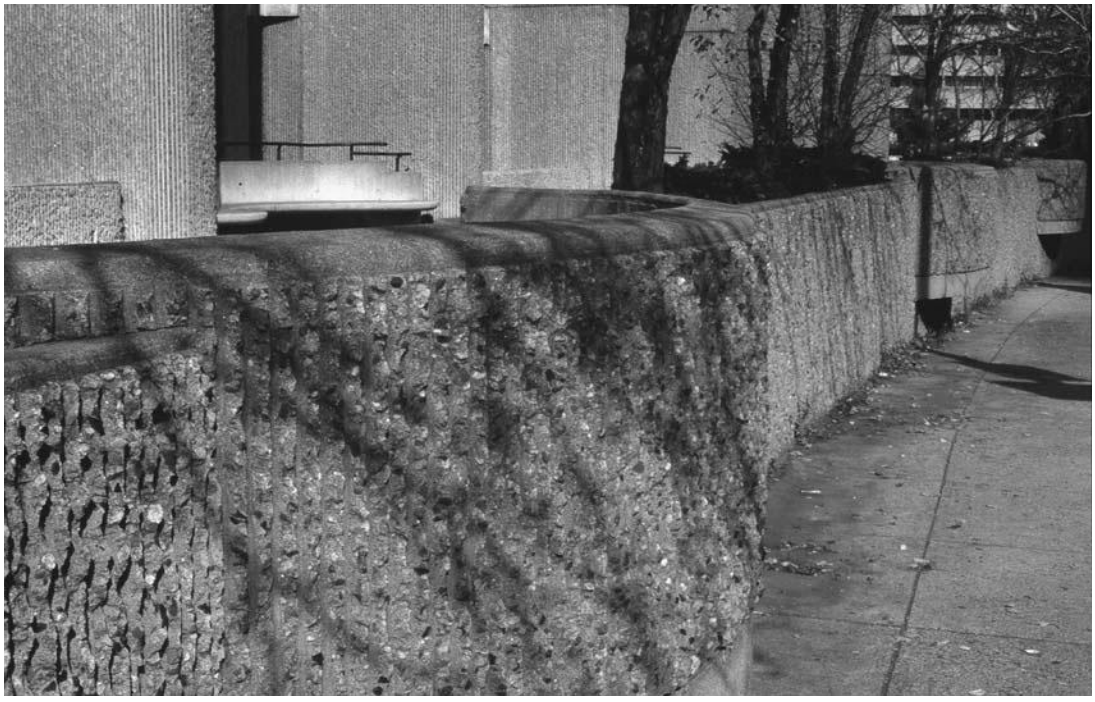


FIGURE 7.6. State Service Center, Boston, detail of corduroy concrete bordering the sidewalk and on the facade in background. Photograph by the author.

each story steps back from the plaza, as if recoiling from some threat. The sense of a bunker architecture is confirmed at street level, where the center's rough, even injurious, corduroy concrete ensures that humans will keep their distance. If access to the halls of government comes at the discretion of the state, in Boston's Government Center urban renewal area, neither the state nor the city would retreat from robust representations of its respective position of authority.

Even a federally sponsored history of the period criticized 1960s and 1970s federal government buildings for the "forbidding" inhumanity of their bunker architecture. As examples in the nation's capital, this study cited Marcel Breuer's "bleak" 1968 Department of Housing and Urban Development headquarters and, perhaps the most obvious example, the Federal Bureau of Investigation Building by C. F. Murphy Associates (1967–74), "a large hunk of inaccessible concrete," a "high-security behemoth," protected by moats, right on Pennsylvania Avenue in the ceremonial core of the city.[44] The preceding examples suggest that bunker architecture was popular for institutional and cultural buildings—schools and universities, libraries, and government offices—buildings that were open to the public

but that also aspired to protect citizens and "civilization" from a hostile world outside. In particular, these were building types associated with the programs of the welfare state.

As astute commentators noted at the time, then, Boston City Hall was not unique but was representative of a wider-ranging ethos that exhibited defensive and offensive characteristics. The language of Scully and Pevsner suggests these "aggressive" buildings reflected a generalized threat back on society. In conjunction with its expressions of urban angst, bunker architecture manifests the logic of twentieth-century aerial, intercontinental, and atomic warfare. Its characteristics were not invented within the discourse of a modern movement, though modernists embraced them in the 1960s. Through civil defense, geopolitics influenced the form and function of buildings, and architecture reciprocated by solidifying the national resolve necessary to foreign policy. And, concern for civil defense in the United States reached its zenith at the moment of the Boston City Hall competition.

COLD WAR CONTEXTS OF THE CITY HALL COMPETITION

In 1951, the heart of old Boston was targeted for a hypothetical attack scenario produced as an exercise to test protocols and communication between city and state civil defense officials. A newspaper reporter described a scene of Cold War experts performing their roles of national importance: "Coatless, shirt sleeves up, and ties loosed, regional personnel sweated in a crowded . . . control center."[45] Ground zero for this scenario was Scollay Square, a seedy district long targeted for slum clearance. Ultimately, this became the exact site for the new City Hall building. Beginning in the late 1950s, the Government Center urban renewal plan replaced Scollay Square and its abject surroundings with major public buildings and private developments. Urban renewal acts of "creative destruction" often overlapped with imaginaries of atomic bomb damage.

In a number of ways, the city of Boston was at the forefront of national civil defense activities, regularly participating in exercises and often serving as a test case for new emergency planning initiatives. Civil defense was a national project that could only be implemented through state, county, and municipal participation. That Boston was the state capital, county seat, and regional center for the federal government may explain why the city was comparatively advanced in its civil defense organization. Commentators believed this concentration of governmental authority

could make Boston a model city for the National Fallout Shelter Program. In an early 1961 panel on establishing an emergency plan for the city, Boston's health officer called for fallout shelter in new construction; specifically, he argued that government should exert leadership in this matter, starting with the new federal, state, and city buildings then under development at Government Center.[46] The Government Center commissioners did debate "the very serious question of providing fallout shelters," though the City Hall competition document ultimately did not require radiation-protected space.[47]

Regardless, civil defense planning, and fallout shelter analysis and design, were some of the architecture profession's hottest issues during the very months when competition entries were being prepared. Coincidentally, the day after the announcement of the City Hall competition, American Institute of Architects (AIA) president Philip Will addressed his letter to the membership, drawing their attention to the great potential for public relations and good citizenship available to architects participating in the fallout shelter program. Will's letter sparked several months of controversy within the profession regarding the appropriateness of designing for war and destruction. That November, the OCD awarded to architect and engineering firms the first contracts for the National Fallout Shelter Survey, just as the Soviets tested a fifty-seven-megaton nuclear device—the largest ever tested by either side, as was fully discussed in the media.[48] Meanwhile, as registrants raced to meet the City Hall competition's December deadline, they may have paused to read articles in the *AIA Journal* that further described the architect's role in civil defense and presented the case study of a school with fallout shelter.[49]

The jury in the Boston City Hall competition did not choose a winning design based on civil defense criteria. However, reflecting the moment's growing debate among architects over protective design, at least half of the eight City Hall finalists shared common elements of a bunker architecture that were discussed explicitly at the time by the jury and other commentators. One finalist's entry was described as "forceful and strong and possibly brutal." Mitchell and Giurgola's final design (Figure 7.7) was noted to be "a strong and vigorous symbolic solution." Like the winning scheme, their City Hall was characterized by massive vertical pylons holding up deeply articulated concrete facades that projected increasingly outward over the plaza and the public. A brick screen wall protecting the glazed upper stories suggested a first line of defense. Most of the designs took up a doughnut morphology that, in combination with opaque concrete

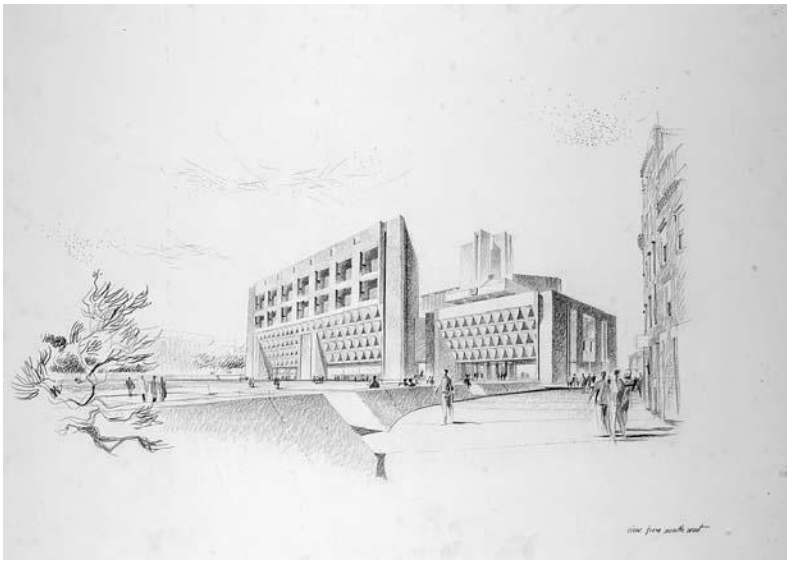


FIGURE 7.7. Finalist in Boston City Hall competition, Mitchell and Giurgola, architects. The Architectural Archives, University of Pennsylvania.

facades and cavernous approaches, evoked a protective enclosure. The most extreme version of this morphology was the final entry by Progressive Design Associates (Figure 7.8), an unglazed concrete doughnut reminiscent of 1950s designs for bombproof structures. Experts in the 1950s had claimed that the effects of blast would wrap around and hug a circular, windowless building without causing critical structural damage.[50] In this competition entry, a subterranean city council chamber accessed by passing under the main body of the building, as if entering a portcullis, only emphasized the parallel between design and defense. Finally, the winning perspective (Figure 7.9), with its dark shadows, captures the forbidding character of the design, which the jury described as an "imposing" and "daring yet classical architectural statement, contained within a vigorous unified form."[51] Overall, the bunker aesthetic of the widely disseminated City Hall finalists strongly influenced the forms of public buildings in the subsequent decade.

ARCHITECTURAL REALISM IN THE COLD WAR

If the jury was excited about the "strength" and "vigor" represented by many of the finalists, reviewers invariably used masculinist adjectives like "burly," "brawny," "coarse," "forceful," "hard," and "muscular" to describe the winning design for Boston City Hall. This masculine potency was a

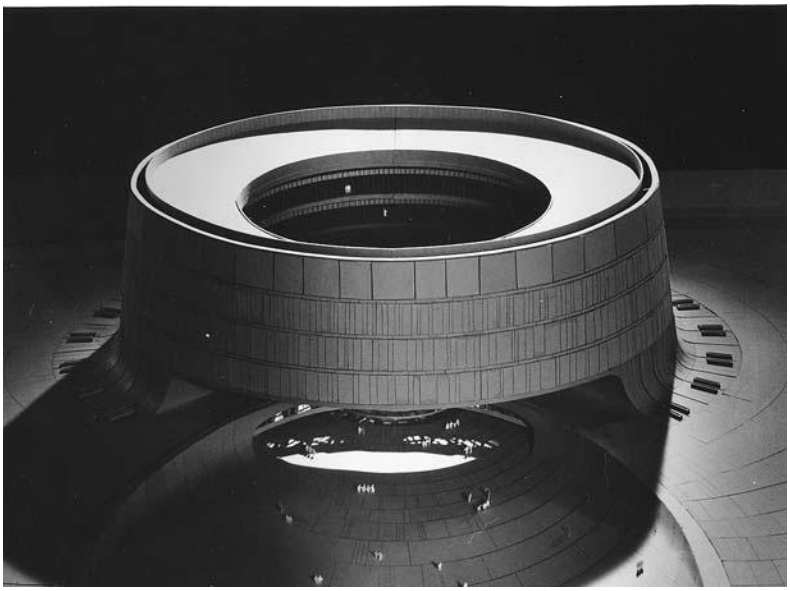


FIGURE 7.8. Finalist in Boston City Hall competition, Progressive Design Associates. Courtesy of Tom van Housen.

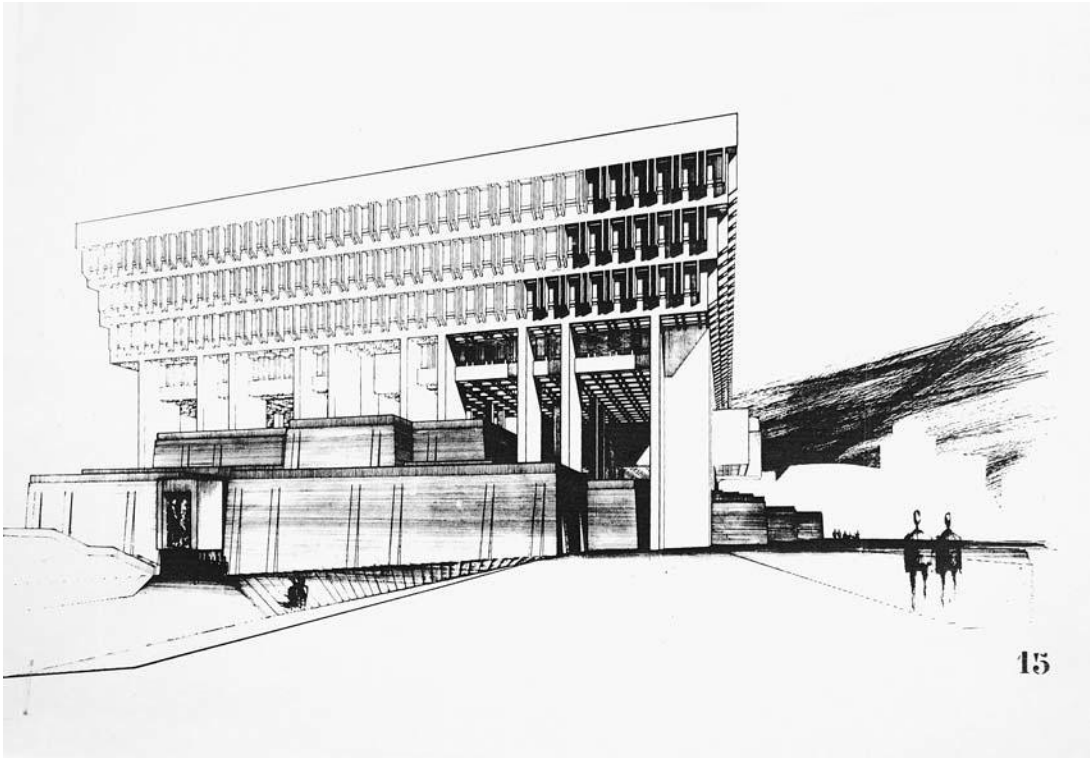


FIGURE 7.9. Perspective of Boston City Hall. From Boston Architectural Center Library.

common theme in early 1960s American discourse and overlapped with American fears of weakness in individual and national resolve. It characterized the new, youthful, Kennedy White House with its muscular approach to foreign policy, as much as it did the criticism of moribund International Style architecture and its corrupt 1950s variants. Pointing to the conformity of "the Organization Man," and other pop culture images of men, contemporary critics and historians have noted a crisis of masculinity at this time, as well as counterexamples of a more rugged and dynamic manhood. Architectural historian Timothy Rohan has shown how Paul Rudolph in the 1960s adopted unornamented, rough concrete as his signature material in response to earlier critiques of his effeminate and ornamental deviations from modernism.[52] The winning solution in the City Hall competition conformed to this new theme of brute architecture and politics. As Kallmann put it to Wolf Von Eckardt of the *Washington Post,* his competition-winning team hoped to articulate clearly the vigor of government. It was, according to Kallmann, "no accident that the . . . designers were inspired by the presidency of John F. Kennedy who, like this new City Hall, pronounced the word 'vigor' with that peculiar Boston accent."[53]

Kallmann, McKinnell & Knowles themselves were not actually Bostonians but an almost unknown trio of architects and educators from New York. Kallmann was known in the architecture world for a manifesto he had published on what he called "Action architecture," not surprisingly a vigorous and strong approach to design akin to European Brutalism, which Kallmann admired for its "violently physical immediacy of image."[54] Action architecture clearly drew inspiration from Jackson Pollock's Action painting. The enlistment of Pollock and other American painters into Cold War politics has been well documented. According to art historian Serge Guilbaut, it was their powerful representation of freedom and individuality, personalized with a heavy dose of virility, that made avant-garde painters so compelling to U.S. propagandists during the early Cold War.[55] Although the parallel between painting and building is inexact, the qualities attributed to abstract expressionism resonated with the way Kallmann was writing about architecture. Like the American avant-garde painters, Action architects would claim an existentialist-inspired interest in the "as found."[56] Rather than earlier modernist idealism about giving form to new and improved social relations, Kallmann and others at the time proposed accepting the objective reality of existing social contexts—their innovations would be purely formal. Indeed, what they "found" was a generic backdrop of corporate modernist, glass curtain wall buildings against which

vigorous, material interventions would stand out. The seeming neutrality toward social change—as Guilbaut shows, equally a hallmark of the painters—exposed these cultural producers to enlistment in the representational projects of the state.[57] Therefore, despite their best articulations of avant-garde rhetoric, or perhaps because of them, this new generation of architects was incorporated into the mainstream profession with remarkable alacrity. This language of objective realism—of taking the political situation "as found"—also filtered through debates about the participation of architects in federal fallout shelter programs. Indeed, the signatories of the contentious 1962 petition against architecture for civil defense—which included such luminaries as Walter Gropius, Victor Gruen, and Clarence Stein—can be associated with an older, modernist and socialist avant-garde that promoted better shelter for all rather than fallout shelter. The new, brutal, and rigorous avant-garde, being hardheaded about the world, seemingly embraced the realist requirement for architects to address fallout shelter.

The distinction between old and new avant-gardes can be traced within the ranks of the three partners who won the Boston City Hall competition. Edward F. Knowles, the partner who elected to remain in New York City while Kallmann and McKinnell took up the commission in Boston, was one of the petitioners against civil defense. In addition, he wrote separately to the AIA in protest of its continued leadership role in the second national fallout shelter design competition. The AIA forwarded this letter to Robert Berne, chief architect of the OCD, who chided Knowles in response: "It is sincerely regretted that you find it necessary to voice such strong objections . . . I'm sure you would welcome an opportunity to discuss your views with us in greater detail . . . and take this means to invite you and any of your colleagues, who feel as you do, to visit our office in the Pentagon."[58] Knowles, chairman of the Brooklyn Heights chapter of the national Committee for a Sane Nuclear Policy, declined Berne's invitation to visit the Pentagon, characterizing this opportunity as "talking to the fox in the henhouse about his behavior." Nevertheless, Knowles recognized that his name carried a certain amount of "clout" in the architecture world for a few years after the trio won the competition, and he used this fame to protest the fallout shelter program and other issues. Knowles, who self-identifies as a "left-wing liberal," could be associated with a less "objective," more idealistic avant-garde. Although he traveled weekly to Boston during the design development and early construction phases, Knowles states clearly that Kallmann and McKinnell were the main designers of

Boston City Hall and that the building was "their baby." "Aesthetically, it was a movement at the time, that was the point," says Knowles, and its polemical expression was "not his style or approach at all." For Knowles, a humanistic architecture and urban design began with the perceptions and experiences of individual users in space, rather than with a will to form.[59]

In contrast, Kallmann's Action theory would deal with objective realities. He called for a willful, formal solution, an explosive architecture that "tears into the space that surrounds it, using violent horizontals and rocketlike excrescencies in a searing vision of ruthless energy unleashed." Prefiguring the competition entry, he concluded: "In its physical concreteness and firmness of build, [Action architecture] strives for a confirmation of identity and existence to counter the modern fear of nothingness."[60] If nuclear war was one source for these modern fears about the future of existence, then Action architecture was needed to confront Americans with the dangerous realities of their time. Ada Louise Huxtable put Boston City Hall within this zeitgeist, writing in the *Times* that this "tough and complex building for a tough and complex age . . . will outlast the last hurrah."[61] Bold, aggressive forms could confirm the commitment of citizens to meeting those realities head-on. This instrumental sort of existentialism could counter apathy toward civil defense by shocking people awake, convincing them to take action to ensure the continuity of their existence against the nothingness of nuclear aftermath. However, in a rare, negative response to the competition entry in the architecture press, the critic and historian of early modernism Peter Collins was bemused by Kallmann's blustery rhetoric and saw in it a capitulation to Cold War fears. He wrote that only upon the completion of Boston City Hall would we "discover whether Action Architecture really is the deliverance from machine-age monotony promised by its promoters, or whether it is simply the architecture of William Butterfield raised to the terrifying dimensions of the atomic age."[62] Collins's critique was atypical among architectural reviewers, who almost exclusively agreed that the building made an uncompromising statement appropriate to 1960s U.S. culture, countering the conformity associated equally with Soviet communism, corporate glass-box modernism, and the "fear of nothingness."

CIVIL DEFENSE AND BOSTON CITY HALL

However people interpreted the building's formal and tectonic characteristics, Boston City Hall quite literally furthered a civil defense agenda by

accommodating fallout shelter and other related uses. To begin with, Boston City Hall housed a civil defense bureaucracy. Like most U.S. cities, Boston had its own Department of Civil Defense, which coordinated local plans and activities under the guidance of the federal agency. The data from the 1959 space planning report for the new City Hall were included in the competition document, so the eight finalists had to locate offices for the Department of Civil Defense on their plans.[63] On the early plans of Kallmann, McKinnell & Knowles, Civil Defense was to be isolated on the amputated fourth floor of the northeastern block (Figure 7.10). This reflected the low number of public visitors to the department at the time of the space planning report, and the department's lack of necessary interaction with other city divisions, except in emergency situations. (This initial location for Civil Defense is now the City Hall daycare center.) On the exterior, this originally assigned space reads as a windowless brick bunker,

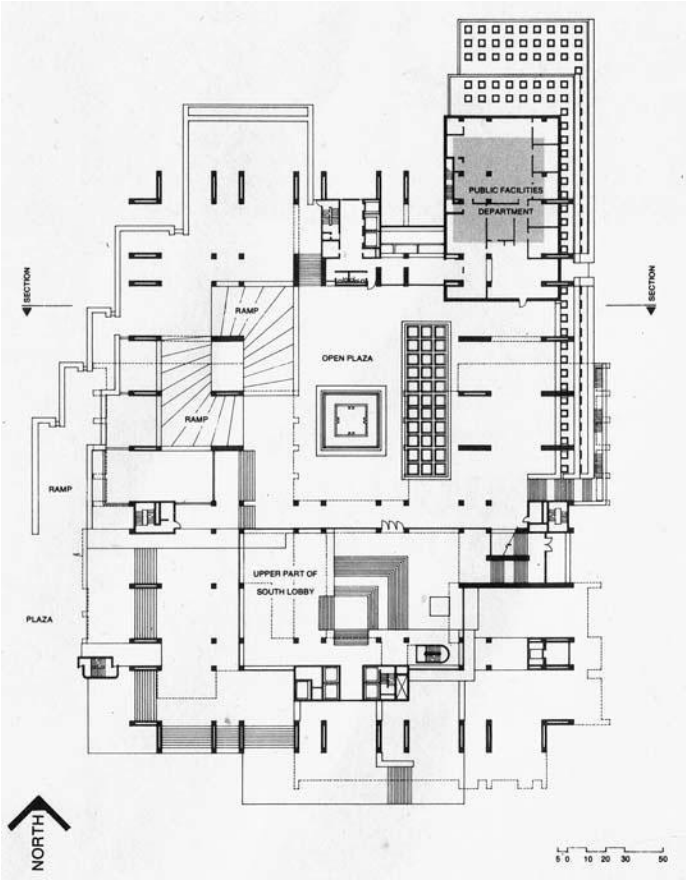


FIGURE 7.10. Plan of fourth floor, Boston City Hall. The original location of the Civil Defense offices is in top right corner (labeled "Public Facilities Department"); the shaded area in that space indicates the boundaries of fallout protection. From Office of Civil Defense, *Boston City Hall/Boston, Massachusetts: Buildings with Fallout Protection, Design Case Study 7* (Washington, D.C.: Government Printing Office, 1971).

almost as if it were a form of *architecture parlante* (see Figure 7.3). In this location, the Department of Civil Defense would have been symbolically prominent on the outside of the building but programmatically obscure.

The status of Boston's Department of Civil Defense had changed by the time City Hall opened in 1969, however. A new location on the public concourse of the second floor, amid the wickets and waiting areas devoted to citizen access, reflected an explosion of requests for information during the early 1960s, culminating with the Cuban Missile Crisis. This city department also needed more space and staff to coordinate and implement the far-reaching new federal programs of that decade: first, the surveying, marking, and stocking of fallout shelters in thousands of Boston buildings, with all the complex contract negotiations and control of supplies that effort entailed; and then the community shelter planning process that communicated the civil defense program to the public.[64] The second floor of Boston City Hall has no exterior presence, being nestled into the slope of the site, one story below the grade of the plaza. In this location, the Department of Civil Defense would have been programmatically prominent on the public concourse but invisible and sheltered from the outside.

Fallout shelter signs at the entrances to Boston City Hall punctuated the message of national security, however. Boston's shelter stock was augmented greatly by the completion of the new City Hall building, with its capacity to protect exactly 19,293 citizens after an attack. Kallmann and McKinnell did not design the building with the express purpose of protection from nuclear attack. But many aspects of fallout shelter were *inherent* to the bunker architecture of the building—its mass, overhangs, thick concrete waffle slabs, and the way it burrowed into the grade of the site. Even if a bunker aesthetic was not necessary to attain adequate protection from radiation, it typically resulted in better shelter than other formal solutions. Of course, none of the subsequent calculations by the fallout shelter analysts considered how fallout might drift and accumulate through, under, and among the courts and colonnades in the building's complex midsection. But in the best-case scenario, at least, the direct vertical descent and horizontal settling of fallout particles, shelter could be delineated with mathematical precision.

Accordingly, fallout shelter was to be found on all floors of Boston City Hall, except the top (Plate 11). On the open plan office floors (six to eight), protected space extended only as far as the penultimate bay of the structural grid, except along the south side, where protected space extended to the outside wall (Figure 7.11). It remains unclear how city

workers would have known the boundaries of their shelter area, even with OCD interior decals in place. (The placement of decals inside this building would have been a large and complex project for Boston's Department of Civil Defense, and there is no evidence that it was completed.) As was often the case in other buildings, the dividing lines between adequate and inadequate protection were the invisible results of abstract calculations, rather than the phenomenological experience of roofs and walls that humans customarily associate with shelter from the elements. In fact, the building's bunker aesthetic may have undermined its occupants' understanding of the shelter space. How would they know that two adjacent spots in the same room, under the same muscular waffle slab, could have different Protection Factors? They may have realized this only after days of slowly receiving more radiation than was allowable under OCD standards. Then it would have been too late.

On lower office floors, fallout shelter coverage was more complete, though there were some areas ripe for the confusion of shelterees. The windowless, brick block on the northeast corner of the building (above the garage in Plate 11) may have seemed a likely place to seek safety. Indeed, the entire third floor of this block, the Assessing Department, had the required Protection Factor (Figure 7.12a). But the floors above and below

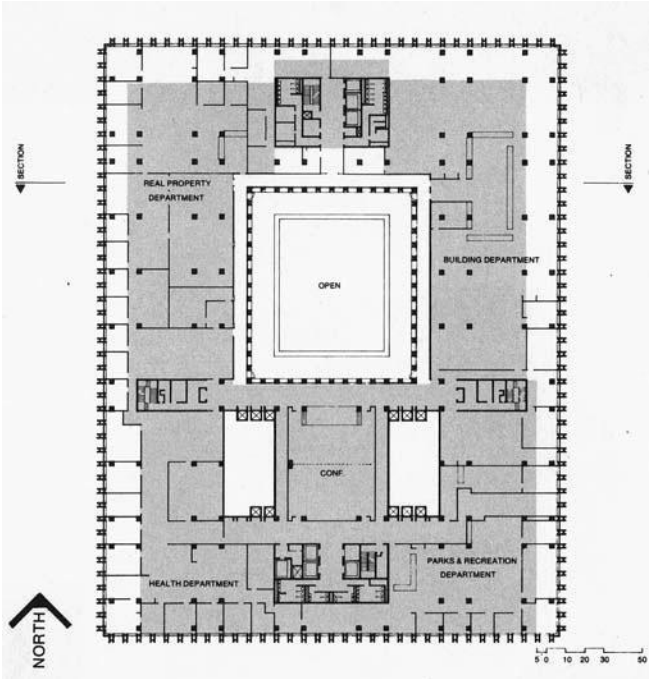


FIGURE 7.11. Plan of eighth floor, Boston City Hall. Shaded areas correspond to fallout shelter. From Office of Civil Defense, *Boston City Hall.*

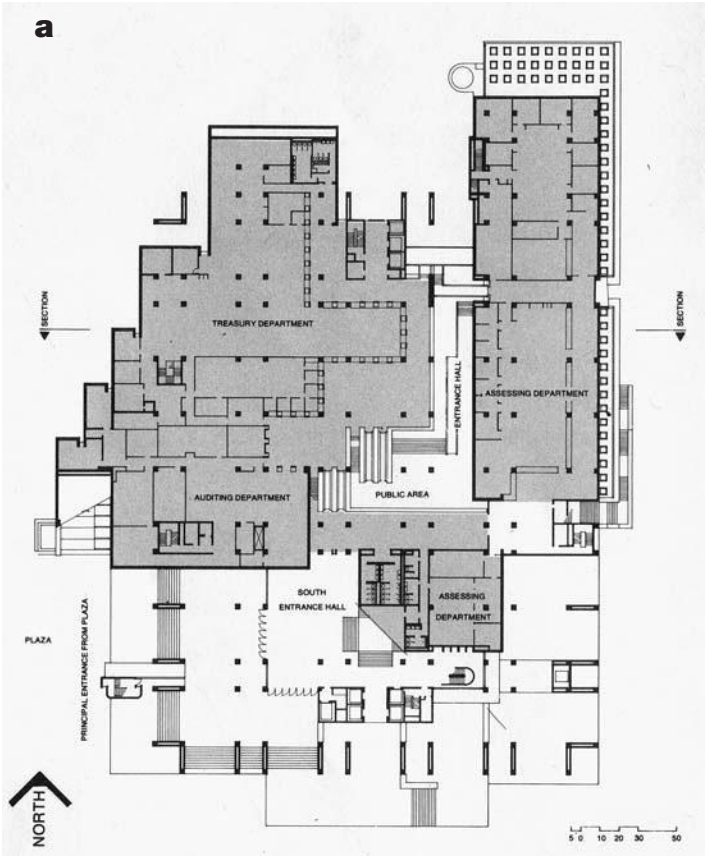
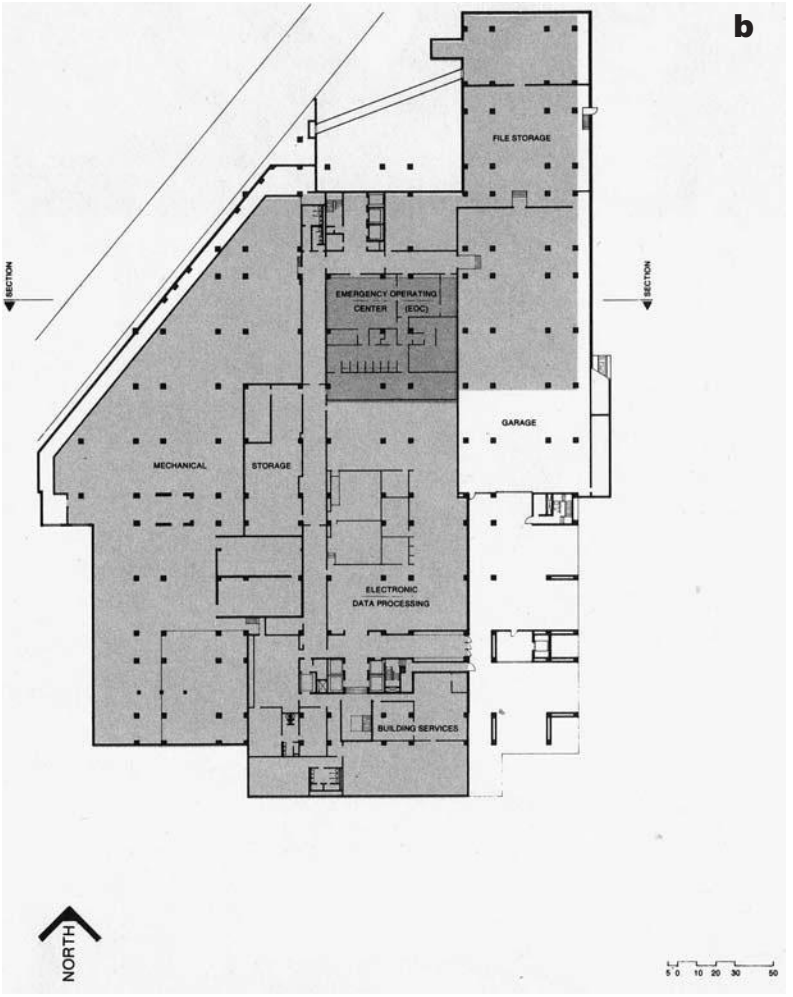


FIGURE 7.12. Floor plans for Boston City Hall: (a) Third-floor plan; shaded areas correspond to fallout shelter. (b) First-floor plan (basement); fallout shelter is lightly shaded, with Emergency Operations Center indicated by darker shade. Both from Office of Civil Defense, *Boston City Hall.*

it, despite their formal and spatial similarities, had significant lacunae of protected space. On the second floor, fallout shelter did not extend all the way to the east wall, presumably because this side projects farther than the protective overhangs above it, creating a ledge where radioactive particles would settle. And on the fourth floor of this block, the one initially slated for the Department of Civil Defense offices, shelter boundaries were particularly obscure, with some demarcating tiny corners in private offices as areas of refuge from fallout, while the rest of the room was vulnerable to radiation (see Figure 7.10).

For their part, the public areas of the second and third floors may have offered the grandest fallout shelter in the city. Broad and monumental, top-lit spaces with high ceilings, the atrium and concourse could have inspired faith in the continuity of democratic civilization as Bostonians rode out an attack and its aftermath. These areas would have filled up fast,



as shelter managers assigned space on a first-come, first-served basis. Despite its grandeur, this still would have been spartan shelter. Since neither the federal nor municipal civil defense agencies offered to supply cots, thousands of citizens would have slept in space they claimed on the cold, hard floors. In contrast, city office workers at least had thin institutional carpet to sleep on, as well as already established personal or group work spaces around their desks. As the building filled up with people seeking shelter, though, office areas would have had to become denser to accommodate the total protective capacity. Moreover, fallout shelter on the office floors lacked the inspiring architectural qualities of the atrium

and concourse. Entirely "greige" floors and furniture characterized the offices, an aesthetic praised by the *Interiors* reviewer, who noted that some minimal black and white trim was the only color enlivening the palette of these spaces.[65]

In all likelihood, during shelter inhabitation most citizens and office workers would have kept to their assigned areas within Boston City Hall's much-touted tripartite organization. Elected officials, and a few select others assigned to continuity-of-government duties, would have relocated from their symbolic and ceremonial positions in the building's midsection to the spartan but secure Emergency Operating Center (EOC) in the heart of the basement level (Figure 7.12b). There, they would have been surrounded by, but completely separate from, a fourth class of occupants: those unfortunate latecomers who would have had to settle for assigned shelter spaces in the dingy garage and mechanical rooms (Figure 7.13), both marked as shelter space on plans and sections of the building. The

FIGURE 7.13. Mechanical room, Boston City Hall. Approximately twenty people could have sheltered in the floor space pictured here. Photograph by the author.

mayor's office itself, plus the council chamber and associated offices, were inappropriate as shelter because of their very prominence on the building's facades. Their expressive concrete hoods would have trapped fallout, and their extensive glazing—such as the mayor's floor-to-ceiling window overlooking Faneuil Hall—would have done little to attenuate radiation. Even as the building's overall appearance suggested the idea of shelter, aspects of its design would have worked to the opposite effect.

To maintain an emergency city of twenty thousand citizens required a raft of shelter supplies. Close to a million crackers supplied by the federal OCD were stored—still are stored—in two subbasements of Boston City Hall (Figures 7.14 and 7.15).[66] There is no evidence of OCD water barrels in these storage areas, which suggests that fallout shelter analysts believed enough potable water would be stored in the building's heating, cooling, and fire suppression systems to sustain the protected population for two weeks. First aid, radiation monitoring, and sanitation kits made

FIGURE 7.14. Fallout shelter food supplies, subbasement of Boston City Hall, 2007. Each box contains thirty pounds of high-calorie crackers. Photograph by the author.

FIGURE 7.15. Fallout shelter food supplies, sanitation kits, and scattered remains of first aid kits, subbasement of Boston City Hall, 2007. Photograph by the author.

up the remainder of the supplies (the first two of these have been removed in recent years by representatives of the Federal Emergency Management Agency). Presumably, trained shelter managers among City Hall staff would have known where to find the caches of shelter supplies. Down through cast iron hatches near the bottom of both stairwells (Figure 7.16), shelter managers and their recruited deputies would have found endless stacks of waxed cardboard boxes and cylinders: high-calorie crackers and chemical commodes.

The rationing of limited supplies among the shelter population would have been a monumental task of organization and social control. During the shelter stay, and no doubt afterward as well, all citizens would be by necessity under the charge of a totalized welfare state. In addition to food and water, even medical attention would have to be rationed. For instance, with access to nearby pharmacies being difficult or impossible, just the quotidian maintenance of patients with chronic conditions like

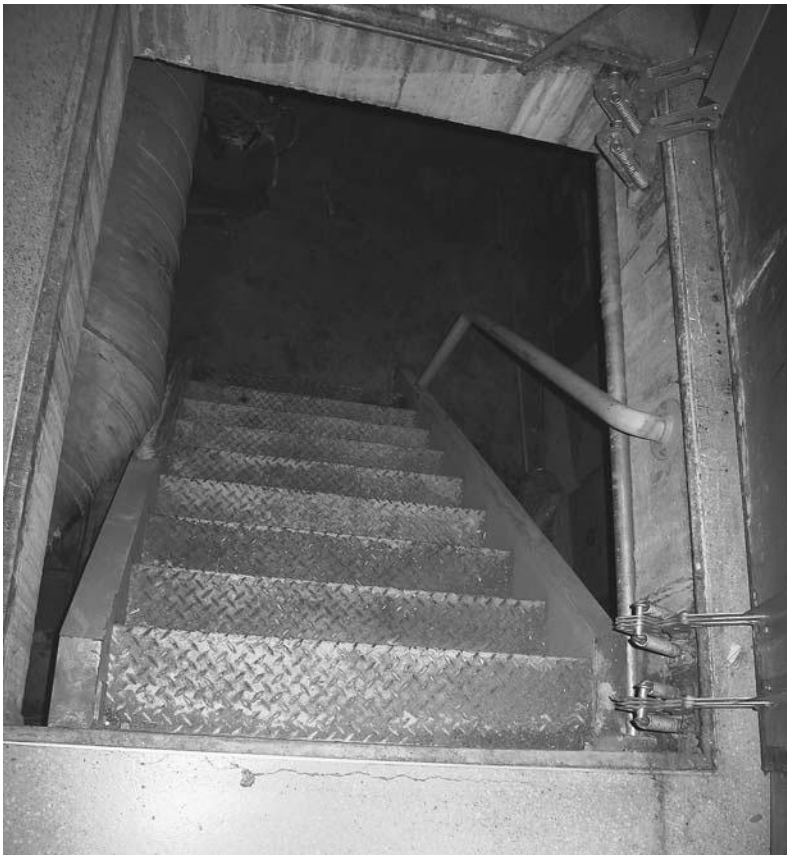


FIGURE 7.16. Hatch access to subbasement storage of fallout shelter supplies, Boston City Hall. Photograph by the author.

diabetes would be a significant crisis. Add to that the everyday problems of any small city, such as social or political power struggles, crime and punishment, or medical emergencies. As the shelter habitability studies indicated, potential psychological issues were multiple and unpredictable. The largest of the shelter habitability studies tested a group of four hundred under laboratory conditions—how would a real group respond if it were fifty times that size? Finally, it remained unclear how existing social relations of gender, class, and race might be ensconced, exacerbated, or inverted in the new urban order of this huge fallout shelter. The civil defense imaginary always was molded by the standards and assumptions of white male experts. When put into practice, could the experts control—by tradition or force—a shelter this size? Would races and classes shelter together amicably? Boston's busing controversy of the early 1970s, metonymically represented by a Pulitzer Prize–winning photograph of racial violence

perpetrated just outside on City Hall Plaza, suggests otherwise.[67] Given the potential for social disorder, it is no wonder the OCD and its researchers always foregrounded the authority of the shelter manager: this civil defense appointee would exercise more power over the people than the typical peacetime mayor. Meanwhile, the actually elected mayor of Boston would be ensconced in the EOC, presiding over an empty city.

An Emergency Operating Center was not part of the original space planning report for Boston City Hall, but the city took advantage of federal matching funds and added one to the project soon after the competition (Figure 7.17). Boston's EOC included space for fifty men to eat, sleep, and work for at least two weeks—and they were mostly men, including the mayor, heads of departments, and public safety officials.[68] For its part, the EOC had its own cistern and cooking and dining facilities, seating twelve

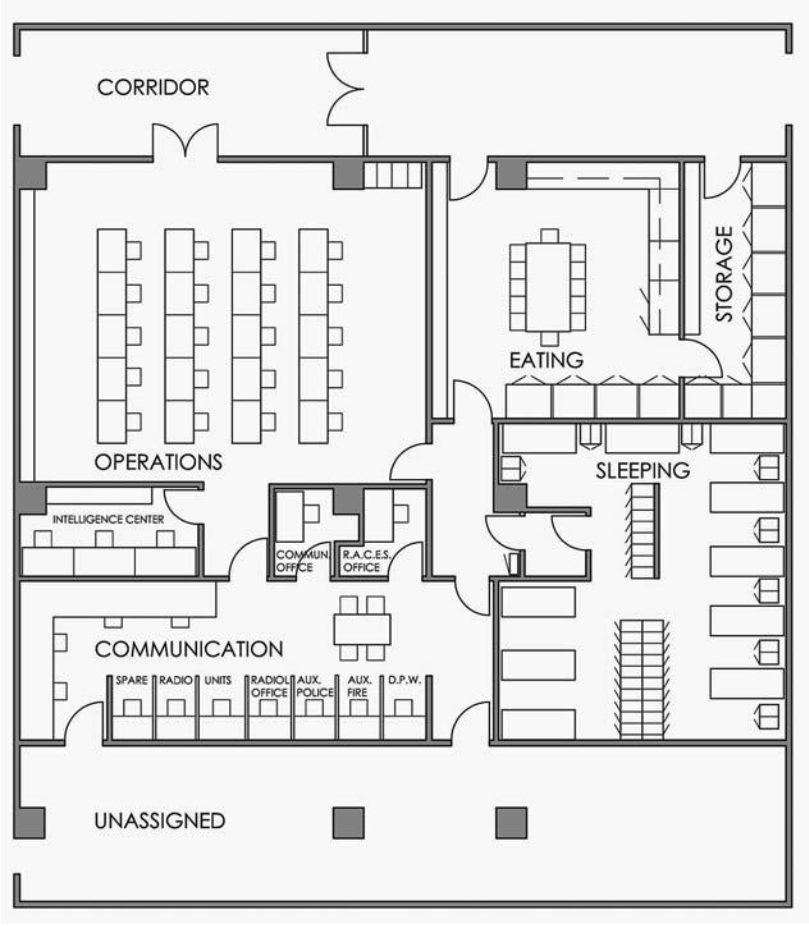


FIGURE 7.17. Plan of Emergency Operating Center, Boston City Hall. Illustration by the author.

at a time (evidently, city administrators could not effectively carry out their duties fueled only by a few crackers). On the other hand, there do not seem to have been toilet facilities in the EOC, so continuity-of-government officials at least would have shared in the experience of OCD sanitation kits. Functionally, in the communication room, a bank of radios was dedicated to city departments concerned with postattack welfare: police, fire, radiological monitoring, and the Department of Public Works. "Intelligence" got its own small office, but the mayor did not. In the largest room, twenty desks and chairs faced the operations map wall where threats and responses could be plotted across the city. For the more immediate vicinity of Government Center, closed-circuit television cameras trained on the plaza piped images to the EOC of any postattack (or protest) environment. Located two floors below the plaza level, and shielded by the walls of the parking garage, the EOC in Boston City Hall essentially was a bunker.

The concern for control of the postattack environment indicated by the EOC found parallels in architectural and urban discourses of the 1960s. Boston City Hall was an early example of a total environment—sealed and air-conditioned, with centralized controls inaccessible to everyday users.[69] The *Employee Guide* distributed upon occupation of the building admonished that inhabitants "must not attempt to adjust" the thermostats or windows because "personnel are constantly monitoring the entire system from the control room on the first floor." The *Employee Guide* went further yet: "NO FURNITURE REARRANGEMENTS [were] to be made by departments on their own," and only qualified staff were permitted to mount approved items on the walls.[70] Circulation was (and is) controlled by interior stairwells that are locked to permit exit only on the ground floor. Moreover, the stationing of "official guides or security personnel at every point in the City Hall"[71] suggests that its tripartite organization may have been less legible, but more rigidly guarded, than the architects originally envisioned.

A controlled built environment also was the basic premise of the Government Center project, as with all urban renewal plans. Government Center brought modernist urban order to Scollay Square, a district previously associated with architectural and social disorder. The City Hall building fit into a preordained plaza space that was itself delimited by the totalizing urban design for the district. Even more to the point, Boston City Hall and its EOC were intended as the command center for the district and city. The building's promoters enthused that it "dominated" the hard plaza and "radiated" into the space[72]—quite literally in the pattern of

paving that sectioned the plaza into radial planes emanating from the building itself. Additionally, the subway kiosk that anchors the corner of the plaza across from Boston City Hall's main facade resonates as a potential fallout shelter entrance. In Boston, there was a strong association between subways and civil defense preparations, with thousands of spaces marked and stocked in transit stations.

Commentators clearly understood the desire to control the environments of Boston City Hall as a response to the rise, in the late 1960s, of mass protest movements and various forms of urban unrest associated with them. Concerns about the containment of social disorder became increasingly prominent among civil defense planners and building professionals. For instance, Boston City Hall's building manager at the time noted that the "openness of the plaza was designed to get demonstrators off the narrow streets where they would smash windows."[73] *Time* magazine also reported on these strategies: though "a bastion, it abounds in entrances, ramps, staircases, and a huge central courtyard—all suitable, as Kallmann points out, for sit-ins."[74] On the other hand, concrete bollards that served as plaza lighting, plus broad stairs and other grade changes, complicated vehicular access to the base of the brick ramparts that meet the ground at most points around the building's perimeter. The plaza's open expanse served to emphasize City Hall's bunker architecture, the building rising as a midspace mass symbolically commanding a cleared field of fire. The ambivalence between the openness and the authority of a public building is here understood as a configuration in which the openness itself ensures effective relations of authority. The intention was not misunderstood, even by sympathetic reviewers like the one from *Interiors,* who noted that a democratically elected mayor

> must come face to face with the people. The vast, accessible hall [public atrium] is the perfect spot for such confrontations . . . the mayor has a preacher's pulpit at his disposal: this is the sculptural stair projecting into the void near the south elevators . . . Anyone on [these] stairs is protected on three sides by an unbroken surface of solid concrete, but he is completely visible (and hearable) . . . From the top balcony level behind the thick, high concrete fence, he commands the entire hall.[75]

This review's redoubled emphasis on the security of the pulpit (Figure 7.18), in combination with its commanding location, suggests that the public accessibility of the building, and of the state functions it housed, was understood in relation to the control of that same public.

FIGURE 7.18. Mayor's staircase, Boston City Hall. Photograph by the author.

Ultimately, though, it was both inherent fallout protection and the exemplary EOC that led to Boston City Hall's being featured in OCD publications aimed at architects. Because of its national prominence among design professionals, the building was irresistible as a civil defense case study. As early as 1966, three years before the building's completion, it was featured in a traveling OCD exhibit on city halls that incorporated public shelters and EOCs—a promotion related to the charrette of the same

name. For the exhibit, Kallmann and McKinnell provided plans and statistics regarding the EOC.[76] Then, Boston City Hall was the focus of a well-illustrated booklet produced in 1971 as part of the OCD's Design Case Study series (Figure 7.19). Like the earlier OCD information sheets, Design Case Studies were inserted into *Sweet's Construction Catalog*. For these studies, the OCD chose buildings with both purpose-designed and inherent fallout shelter, but—as with the competitions, charrettes, and other OCD publications—virtually all of them evoked a bunker architecture. Among all OCD publications, the one on Boston City Hall stands out as an exemplar of the desire to introduce protective design to architects by explaining how it was already intrinsic to the profession's own celebrated, even avant-garde, structures. The Design Case Study announced that the "acclaimed"

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BUILDINGS WITH FALLOUT PROTECTION
DESIGN CASE STUDY 7
BOSTON CITY HALL / BOSTON, MASSACHUSETTS
Office of Civil Defense/DCS-7/December 1971
UNIVERSITY OF MINNESOTA LIBRARY
FEB 1972
Office of Civil Defense December 1971 13 Special Construction Fallout Shelters

FIGURE 7.19. Cover of Office of Civil Defense, *Boston City Hall.*

building, "the creation of three talented architects," was a "triumph" and "a landmark of Boston before it was occupied." Then, it went on to describe lovingly both the EOC "deep within the concrete structure," and "another public benefit not widely recognized": a total number of fallout shelter spaces that was truly "remarkable." Although the text likely was written by A. Stanley McGaughan or another OCD consultant provided through the AIA, here the federal agency assumed a significant role in promoting its interpretation of "good design." According to the booklet, "While the EOC attracts less public attention than the building's architecture, it is no less important."[77] No longer just the purview of architects, patrons, and critics, good design became a concern of the state as it strove to ensure its own continued existence in the face of global—and local—threats.

CONCLUSIONS

Public fallout shelters, buttoned-down EOCs, and other controlled environments of the 1960s prefigured the secret and secure aspects of today's government buildings.[78] Elements of the architecture of Boston City Hall, such as its broad setback and other defensive landscape features, its security cameras, its blank street walls, all are commonplace aspects of contemporary design for security and are often indicated by scholars as evidence of a fortress urbanism that continues to shape social space after 9/11. In addition, many of the forbidding characteristics of public buildings in this mode expressed aggressive attitudes toward their surroundings and users that successfully foregrounded fortification as civic, national, and architectural goals. Thanks to buildings like Boston City Hall, a bunker architecture became normalized in the United States. In this way, at least, civil defense was successful in its goal of militarizing everyday spaces. According to one woman interviewed for the vox populi review, the architecture of Boston City Hall was "a bit grim but you get used to it."[79]

However, if we are to accept the argument that civil defense concerns influenced the architecture of Boston City Hall, then a basic contradiction must be engaged. How can a building protect 19,293 citizens from international events and simultaneously represent the domination of those citizens by the state? Public buildings, especially government buildings, as the points of contact between citizens and the state, necessarily bridge accessibility and security. Citizens of nation-states understand their national identities through their duties to governmental power, and by the individual and group privileges that accrue to their consensus with

that power. As a discourse and practice, civil defense attempts to make the most of these power relations: it offers shelter, but at the same time prescribes the actions of good citizens that seem necessary to the continuity of government. One can only speculate on the extent to which the messages of civil defense, as represented by Boston City Hall, were accepted or acted upon by citizens who interpreted them in the variable context of consensus and dissensus that characterizes the modern liberal state. The history of the building's public reception indicates the inevitable failure of the state's political project. Ultimately, then, even within the discursive realm of civil defense, a building such as Boston City Hall only imperfectly embodied the goals of the state. Nevertheless, as one of many buildings in Boston, and across the United States, that incorporated fallout shelter, City Hall became a local iteration of national civil defense rhetoric.

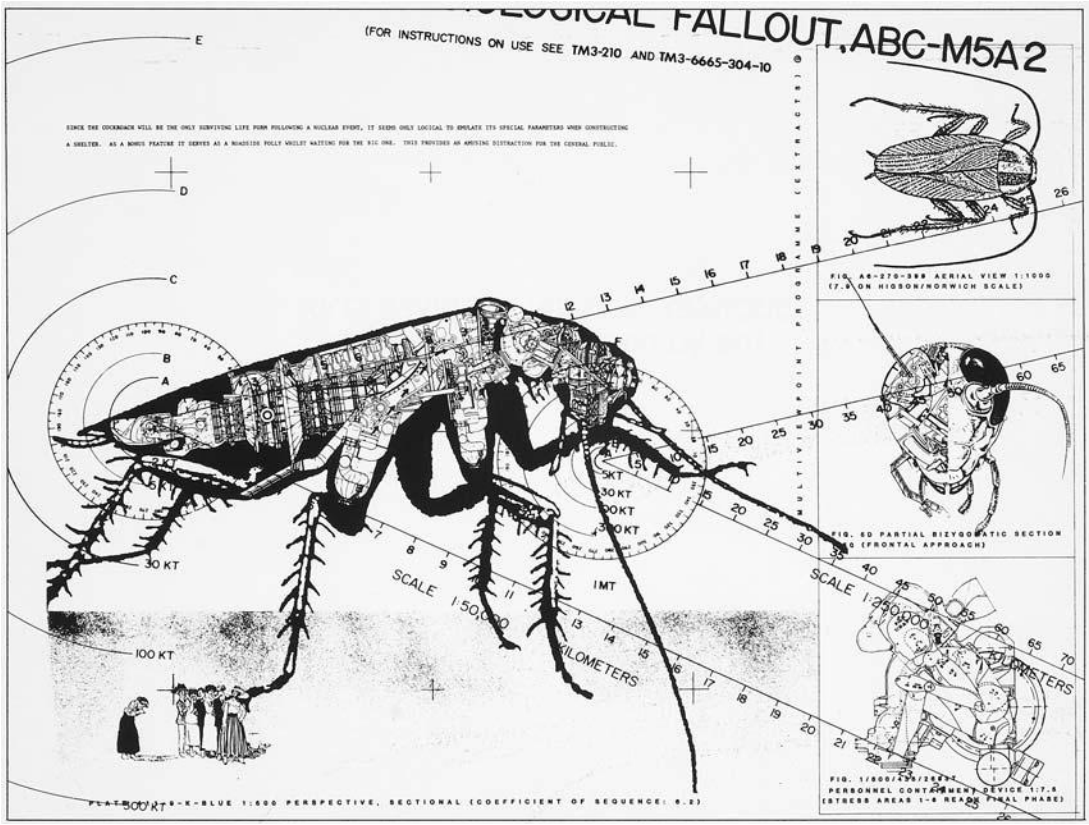
A muscular design was unnecessary to provide adequate fallout protection in buildings, but in Boston City Hall a bunker aesthetic merged with a bunker ethic. That a "bunker architecture" arrived in the United States at the zenith of Cold War crisis suggests that the development of 1960s public buildings can be seen as a visceral response to international tensions, domestic crises, and national beliefs. As civil defense in the late 1960s began to turn its attention away from enemy attack and toward urban unrest and other forms of disaster and disorder, bunker architecture continued to enlist adherents among designers of security-conscious institutional buildings. As a consequence, the meanings of this architecture changed accordingly. But even then, the association of a bunker architecture with Cold War tensions never quite went away. Recently, Boston mayor Thomas M. Menino, in discussing the future of City Hall, concluded thus: "It's got a long life expectancy, because it's built like a bomb shelter . . . You could hit it with an atomic bomb and windows might quiver, but the building won't move."[80] Perhaps an overstatement, but evocative nonetheless.

EPILOGUE

During the mid-1980s, a revival of Cold War paranoia and civil defense rhetoric compelled the prominent Boston-based urban designer, theorist, and educator Kevin Lynch to sit down and pen a hypothetical attack scenario. Ironically titled "Coming Home," Lynch's scenario describes his attempted return to Boston after his evacuation to Northfield (some hundred miles distant) during a nuclear war. Lynch confirmed the earliest Cold War assumptions about enemy targets, imaginatively erasing the legacy of his own design work at Boston City Hall and other sites: "The city center was Ground Zero, an absolute emptiness, still dangerous to enter, but seemed to draw us as if it were a black hole in space. Cold, wet, and mud were our commonplaces, and so we dreamed about smooth clean floors." Although Lynch does not state it, the hard plaza and rough concrete of City Hall might have seemed more comfortable now, relative to the "chaotic landscape of rubbish" that survivors found in the former Boston. Despite the centripetal attraction of the city center, Lynch never locates it. Nor does he ever find his own plot of land, even though he is sure that he has discovered some familiar rubble. "I felt in place again," writes Lynch, but soon enough surveyors come and tell him that what he had discovered was not his land after all. Lynch narrates: "It was as if the ground were jerked away. Hills were valleys, and valleys hills; we were in a different city. I felt a confusion of the senses, and that night I was ill again." Drawing on decades of his own celebrated research on sense of place, Lynch's scenario emphasizes the alienation of the devastated urban environment. The city was "disorienting and without discernible parts," such as the paths, edges, districts, nodes, and landmarks he deployed in his urban design theories about the imageability and legibility of urban spaces.[1] Above all, Lynch intended his qualitative approach to the urban aftermath of nuclear war to contrast with the quantitative approach of government planners who calculated what percentage of people or built fabric might survive the apocalypse. For Lynch, defense of the civil, through good urban design, trumped civil defense.

First published by Physicians for Social Responsibility in their collection of essays, *The Counterfeit Ark,* Lynch's description of Boston was one of many trenchant critiques of nuclear saber rattling and civil defense proposals at the time. The aftermath of nuclear war was the subject of a full range of pessimistic or laughable representations during the 1980s: from comic books and a panoply of popular music; to serious studies by Helen Caldicott and Jonathan Schell, who popularized the notion that insects—especially cockroaches—would rule the earth after a nuclear exchange; from *The Day After,* a made-for-TV movie watched by half the adult population in the United States; to essay collections of "nuclear criticism" written by post-structuralist philosophers such as Jacques Derrida.[2] In architectural culture, the fallout shelter and its legacy of promotion by the profession were targeted for derision through a national design competition for "the true programless building," sponsored by Architects, Designers, and Planners for Social Responsibility (founded in 1981 to address the issue of nuclear disarmament, like Physicians for Social Responsibility, which inspired it). The ideas competition, "meant to elicit thought-provoking images on the paradox of nuclear blast and survival," received some eighty entries, mostly sarcastic collages of civil defense publications and iconic Cold War imagery. They were exhibited in—of all places—the headquarters of AIA's San Francisco chapter. The widely distributed exhibition catalog took its title from one of the more mythic (and self-explanatory) entries: *Quonset Huts on the River Styx.* One compelling design references a bunker architecture by restaging Leonardo da Vinci's *The Last Supper* within a perspectival frame of exposed concrete columns and a thick waffle slab buried under layers of earth. The first-prize entry by two Minneapolis architects was "a mixture of satiric survivability and strong graphic appeal," according to the catalog's foreword, and serves to illustrate the overall tenor of the competition (Figure E.1). In their statement of design intent, the pair wrote, "Since the cockroach will be the only surviving life form following a nuclear event, it seems only logical to emulate its special parameters when constructing a shelter." The result is a creepy diagram of a giant mechanical cockroach, seen mainly in section to emphasize that humans are meant to inhabit its innards.[3]

The swarm of critical responses to nuclear war in the 1980s perhaps reflected surprise that the government of President Ronald Reagan decided to revive civil defense discourse and practice. Not only had civil defense been discredited by its critics of the 1960s, and ridiculed in popular culture—a farcical 1976 episode of the television sitcom *Barney Miller*



being but one example—for more than a decade its representative government agencies had kept a low profile, both underfunded and largely ignored by the public.[4] The national fallout shelter program had languished. Owing to expense and logistics, the federal stocking of fallout shelters had been abandoned as early as 1969, with local civil defense agencies given responsibility for supplying their area's shelters. By 1975 it was established that many of the original crackers had become rancid; millions of pounds were removed from shelters, destroyed, distributed as livestock feed, even sent to Bangladesh as food aid.[5] However, as the history of the Reagan era suggests, civil defense rhetoric, imagery, policies, and practices periodically have been revived in U.S. political culture. Cold War civil defense has left a mixed legacy, and its influence still is felt today. Civil defense agencies currently are less concerned with the threat of nuclear war than with environmental disasters and terrorist attacks. Architecture for civil defense, though, led to the rise of fortress urbanism,

FIGURE E.1. Winning entry by Bill Hickey and Mike Lee, 1986–87 bomb shelter design competition sponsored by Architects, Designers, and Planners for Social Responsibility. From *Quonset Huts on the River Styx: The Bomb Shelter Design Book* (Berkeley: North Atlantic Books, 1987). Collection of Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal.

as design techniques and professional ethics were transferred from Cold War protection to social and environmental containment.

Other than those few years during the Reagan era, when civil defense planning has been brought to the public's attention since 1970, nuclear war rarely has been in the foreground. By that year, civil defense planners had begun to temper their focus on nuclear war, strategically extending their goals to encompass other threats to the urban, social, and political environments. Natural disasters always had been a civil defense concern, though during the early Cold War they had been subordinate to atomic fears; now, a diverse list of threats would comprise the mandate for emergency planners. While the shift in focus was partly a response to critics of civil defense, including The Architects' Resistance and others associated with the profession, it also was an attempt at self-preservation by the civil defense bureaucracy. Given the geopolitical context of arms treaties and détente, officials believed the federal government would be more likely to fund civil defense activities if they addressed disasters, domestic urban unrest, and other nonroutine events, in addition to nuclear war.[6] The transformation of the Office of Civil Defense (OCD) into the new Defense Civil Preparedness Agency (DCPA) in 1972 was symptomatic of the new strategy; while the D-word remained in the name, it seemed to refer to the agency's continued location in the Department of Defense (DOD) rather than reflect any claim to continued tactical significance in the nation's Cold War posture.

One architectural consequence of the shift in civil defense theory was a renewed interest in subterranean space, newly freed from its association with nuclear fear. Rather than the Cold War crises of the previous two decades, going underground now was a reasoned response to the energy crisis of the early 1970s. In a contemporary survey of "The Architectural Underground," one researcher posited that the "energy-saving potential of underground construction has now captured professional attention." This consideration, he maintained, only was conceivable thanks to the pioneering studies of blast and fallout shelter:

> Regardless of the merit of survival shelters, the concern for civil defense made several important contributions to underground development: it eliminated the novelty of underground buildings for a broad variety of architectural applications, it gave professionals a working familiarity with the physical and psychological issues of subsurface design, and it has provided an opportunity to evaluate the actual performance of underground environments.[7]

Its credibility established by the Cold War, subterranean space was explored by the early environmentalist architects, from the various "hippie" experiments in the earth-sheltered housing movement to the more sophisticated science pursued by the University of Minnesota's Underground Space Center. Even civil defense planners got in on the act, noting in a 1977 technical report that while "developing building designs from radioactivity, DCPA has found that some of the techniques used also can improve building thermal efficiency which, in turn, reduces consumption of energy."[8] Moreover, the functional shift of underground space from fallout shelter to resource conservation paralleled the translation of apocalyptic language from civil defense discourse to the environmental movement. The global consciousness that was an outgrowth of antinuclear mobilization was a direct influence on the discourse of environmentalism, which adopted the genre of hypothetical scenarios of devastation. The idea of "nuclear winter," popularized by Carl Sagan after 1983, combined the two discourses in its model of environmental failure proceeding from a full-scale nuclear exchange.

Meanwhile, by the end of the 1970s, the bureaucratic transition from civil defense to disaster preparedness seemingly was complete with the formation of the Federal Emergency Management Agency (FEMA) as an entity independent of the DOD. Ironically, though, this new bureaucracy would be tasked with communicating the revived civil defense message on behalf of the Reaganites. In fact, throughout the 1980s, FEMA republished (with minimal editing or new content) dozens of earlier OCD technical reports, guides, and directives related to fallout shelter.[9] FEMA also revisited the National Fallout Shelter Survey of the 1960s, under the guise of a National Facility Survey. This updated survey recorded, in addition to fallout protection, a building's seismic and flood safety, as well as its appropriateness as a site for the reception or medical care of victims. With the end of the Cold War in 1989, FEMA's focus again returned to natural and accidental disasters—at least until the new millennium. Following the terrorist attacks on the World Trade Center and Pentagon in 2001, FEMA was subsumed into the Department of Homeland Security. As such, enemy attack on American soil again became a central concern of national emergency planning.

While the civil defense advice of 2001 was remarkably similar to that of 1951, or of 1961—at home, stock up on food and water in your panic room; at work, disperse to anonymous suburban office campuses that make poor targets—it would be a mistake to conclude that it was merely

rhetorical (Figure E.2).[10] Significantly, many of the design techniques established during the early Cold War have remained pertinent to what is now an architectural specialization known as "building security." With some modifications to reflect the differences between gamma rays and truck bombs, distance and mass still are the basic ingredients of protective design. According to a 2003 FEMA design manual, "The primary strategy is to keep explosive devices as far away from the building as possible (maximize stand-off distance) . . . [but] hardening of the building's structural systems may be required." Along with the limitation of openings and glazing, the protection of air intake systems from CBR (chemical, biological, and radiological) hazards, and the optimization of emergency egress, designers strive for structural continuity and redundancy, as they did during and after World War II, to "prevent progressive collapse." And, echoing 1950s and 1960s civil defense design guidelines, architects and engineers are told to consider earth-sheltered design and grade changes, the orientation of "glazing perpendicular to the primary façade" in order to present

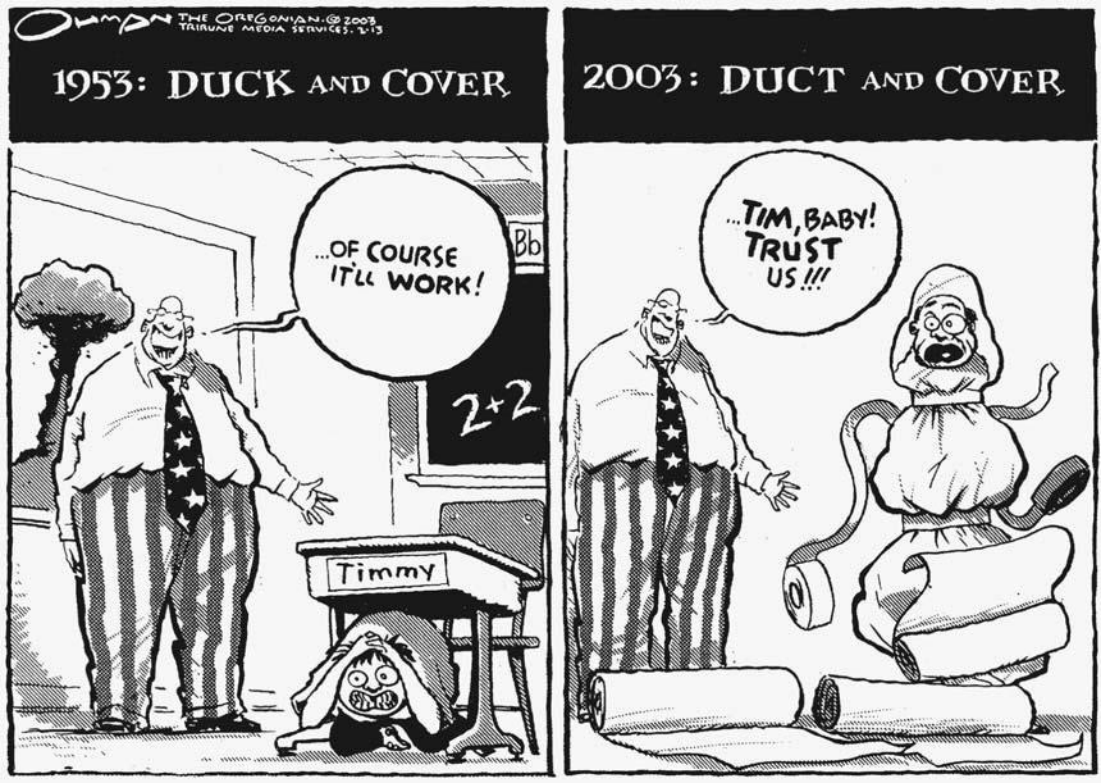


FIGURE E.2. Editorial cartoon by Jack Ohman, the *Oregonian,* February 13, 2003. The U.S. Department of Homeland Security recommended that home emergency kits include duct tape and plastic sheeting to seal the home against chemical, biological, and radiological weapons. Copyright by Tribune Media Services, Inc. All rights reserved. Reprinted with permission.

a windowless street wall, and the development of convex or even circular buildings, since blast waves glance off these shapes.[11] Building security concerns increasingly had influenced embassy design beginning in the late 1960s, when U.S. buildings abroad became popular targets for the local expression of global dissatisfactions.[12] In turn, lessons learned from diplomatic construction were incorporated into antiterrorist design after attacks on American soil.

The 2003 FEMA manual argues that architectural security design "builds upon the synergies [with] mitigation measures for natural hazards."[13] Back in the early 1970s, influences ran in the opposite direction, from Cold War civil defense to disaster preparedness. Robert Berne, chief architect of the OCD, and later the DCPA, interpreted the new civil defense approach for professional designers. In *A Case for Protective Design, Nuclear and Otherwise,* first published in 1972 as an article in the *Construction Specifier* and then as a DCPA technical report, Berne acknowledged that the federal civil defense program had received "constructive criticism" from "some of its friends in the architectural profession" who felt it ought to broaden its mandate to include "peacetime hazards." In this and other publications at the time, the slanting techniques developed to attenuate fallout radiation are extended to other, more tangible and more local, threats (see Figure E.3).[14] Referring to the context of a nation increasingly saturated with news media reporting on natural and manmade disasters, Berne averred, "Today's building owners are security minded." By bringing their expertise in protective design to the table right from the start, professionals "can provide a bonus to the building owner and perhaps improve the architect's image in the eyes of his client."[15] In architectural practice, this is the moment when Cold War concerns regarding national security were translated into everyday considerations of building security; when a bunker architecture forged by the avant-garde saw widespread adoption by public institutions.

One example from this moment serves to illustrate the continuity between Cold War bunker architecture and the fortress urbanism evident in cities today. The widely published Federal Reserve Building in Minneapolis, completed in 1973 by Gunnar Birkerts and Associates, exemplifies multiple aspects of defensive design (Figures E.4 and E.5). Its bunker architecture demonstrated that by the late 1960s, architects had accrued the skills necessary for responding to a range of threats in parallel with Cold War fears. According to a review in *Architectural Forum,* in choosing a firm for its Minneapolis branch, the Federal Reserve did interviews and

FIGURE E.3. Fallout shelter design techniques repurposed for peacetime hazards.

Slanting technique	New applications
Specification of "substantial materials" that have durability and mass	Noise attenuation (from airports, highways, mass demonstrations); protection from vandals; lower maintenance and insurance costs
Increased mass of roof and walls	Thermal efficiency
Requiring a concrete slab roof	Counter "severe winds" and "protect building and contents from Molotov cocktails or other objects thrown by vandals and rioters"
Continuous frame construction	Seismic safety
"Minimizing of exterior openings at vulnerable locations"	Reduced "vulnerability to attacks by vandals and lessened potential damage from a riot"; ability to "maximize control and security" at entrances; savings on heating and cooling costs
Minimal fenestration	Decrease in glass breakage and glass replacement costs (the latter had multiplied tenfold during the 1960s in the Washington, D.C., public school district)
Including a protective core, underground space, or other area of refuge	Tornado or other natural disaster protection; noise attenuation for specific uses (theater, gymnasium) in that space
Earth berming around building perimeter	Protection from floods; reduction of construction and heating/cooling costs
Baffle walls at entranceways	Can "protect the entrance from direct attack by vandals and wind and even constitute a small shield against unwanted noises"

office visits to gauge not only "design excellence" but also "a number of other revealing criteria, such as the caliber of the firm's middle-echelon personnel." These middle managers and managing architects, probably in gray flannel suits, but certainly in crisp white shirts, were the type of employee in a large firm most likely to be fallout shelter analysts. They would possess expertise in the technical aspects of building security that the OCD's Robert Berne advised clients to look for in their architects. Birkerts himself, the firm's principal, had civil defense design experience from his participation in the charrette for city halls and EOCs, for which he had produced a Brutalist essay in bunker architecture.

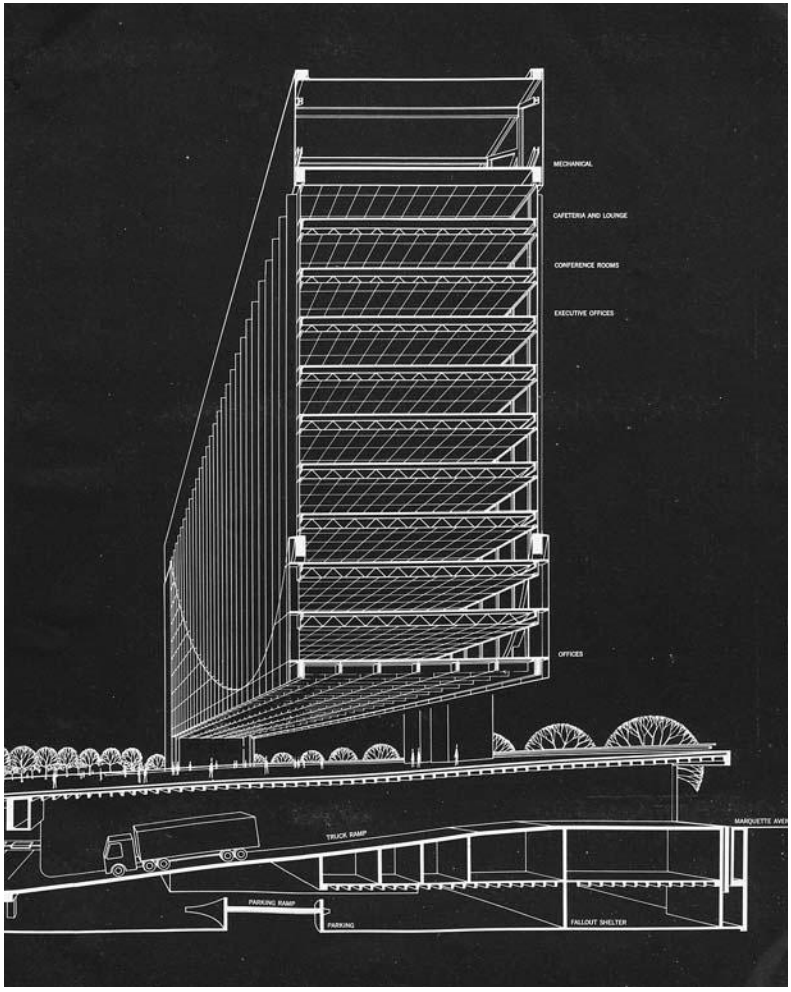


FIGURE E.4. Section drawing, Federal Reserve Building, Minneapolis, Minnesota; Gunnar Birkerts, architect. Fallout shelter at lower right. Pedestrian entrance off Marquette Avenue, at right. From *Architectural Forum,* January–February 1969.

For the Federal Reserve, Birkerts provided a bipartite design: a glazed, eleven-story office tower, characterized by a remarkable catenary structure exposed on the facade, and a "cave-like treasure house below." Deeper still, under the vaults and parking ramps of the Reserve, a fallout shelter hunkered, ensuring the protection of the Reserve's staff. It was an example of deep underground protection that countered the OCD's ongoing promotion of dual-purpose space (Figure E.4). This shelter, and the secure area for the transfer and storage of valuables, were concealed under a large sloping plaza that rose to a crest, then "sharply" dropped twenty feet to the sidewalk below. The street facade here was a "granite-clad mass" forming a vertiginous downtown cliff, from which "a single pedestrian entrance [was] carved out" (Figure E.5).[16] Despite the large public space amenity added to the city's Gateway urban renewal area, and the glass curtain wall of the tower above, the building was effectively a bastion.

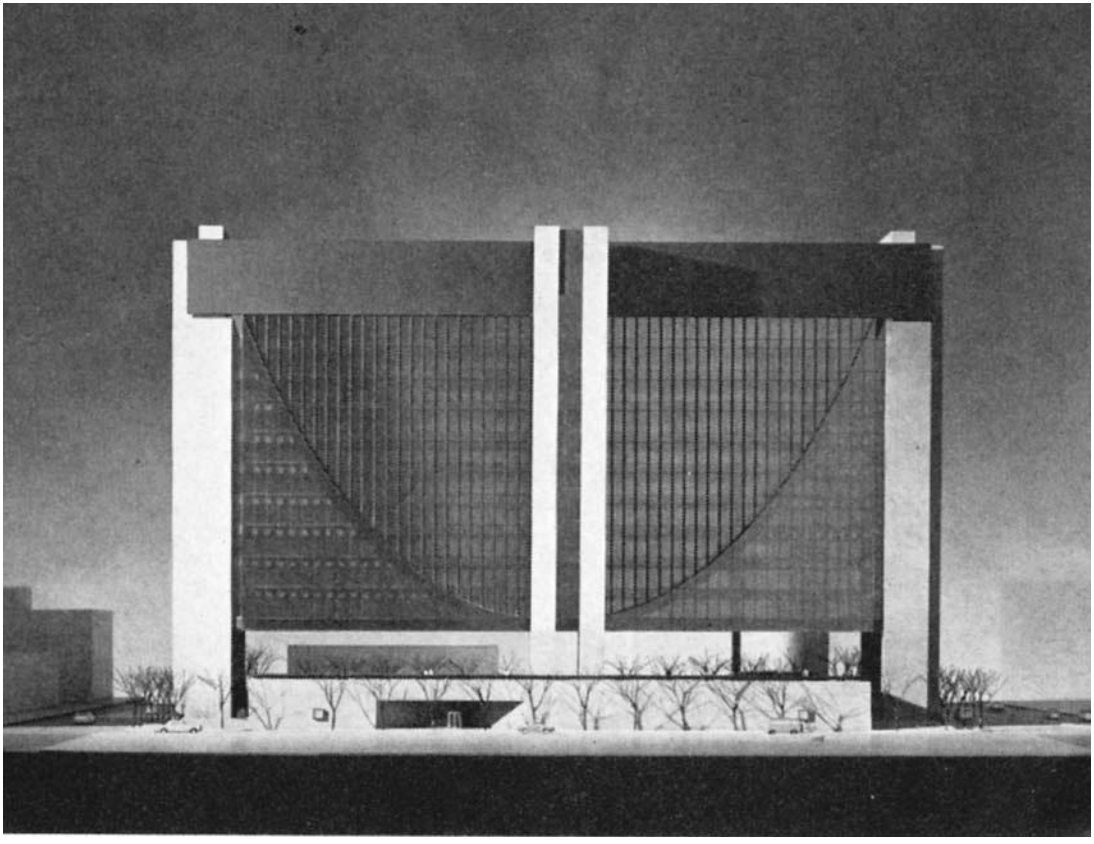


FIGURE E.5. Federal Reserve Building, Minneapolis, Marquette Avenue facade. Cavelike pedestrian entrance to left of center, along granite cliff face. From *Architectural Forum,* January–February 1969.

It actually had no connection with the public sphere and no entrance off the plaza; as one reviewer wrote of this lack of ingress, "a façade 330 ft. long without one imposes an atmosphere of security."[17] With its glazing, the office tower "will look more vulnerable, but it will be out of reach—20 ft. above the plaza." For those keeping count, this places the first floor of offices more than forty feet above the sidewalk and its isolated pedestrian entrance. The service cores and structural end walls, the only features that connect the office tower to the ground plane, are windowless masonry shafts. The writer for *Architectural Forum* concluded that while the secure area underground "must be literally a fortress," the "exterior must be designed as much to *discourage* would-be attackers as to actually repel them."[18] Although building security was an important concern, the architectural representation of security was paramount. If 1960s civil defense planners were ambivalent about the bunker aesthetic, since it seemed to undermine their claims that fallout shelter was available in everyday spaces, the rise of fortress urbanism accompanied an embrace of defensive symbols.

Critics of fortress urbanism have castigated this approach to the design of the built environment and its widespread results in North America and around the world. Some architectural historians and critics, such as Vincent Scully, posed a similar appraisal as early as the late 1960s. Sociologist William H. Whyte lamented the era's megastructures as "urban fortresses."[19] By the late 1970s, he was recording instances of windowless, blank walls as the "dominant feature of the townscape of U.S. cities."[20] Picking up on these earlier commentaries, urban theorist and historian Mike Davis powerfully demonstrated the effects of fortress urbanism on the public realm of Los Angeles. He particularly targeted the bunker architecture of Frank Gehry as "a high-profile, low-tech approach that maximally foregrounds the security functions as motifs of the design." Davis cites Gehry as justifying his design approach by reference to political realism—of taking the city as found, the way both foreign policy experts and architects for civil defense had accepted the geopolitics of the Cold War. Similarly, Los Angeles city officials and property developers, "self-consciously adopting the idiom of urban cold war," talked about the "containment" of undesirable populations in certain areas of downtown. For Davis, this "'hardening' of the city" was the corollary of urban renewal.[21] Other critics have denounced the barricading of cities around the world, as well as the gating of communities and the "citadelization" of public space. Along with bolstered security forces and surveillance techniques,

architectural and urban design elements allow for the efficient sorting of social groups and contribute to the increasing privatization of public space.[22]

In addition to specific design techniques and architectural elements, the National Fallout Shelter Program of the 1960s influenced the ethic of fortress urbanism. As part of a longer historical process of social welfare and total warfare, the city became a site where citizens could be protected from the excesses of modernity, in exchange for their self-discipline. That the civic realm, or rather its accessibility and amenity to the public, became increasingly contingent upon the preservation of existing social relations was one of the legacies of architecture for civil defense as an approach to building and urban design. For instance, the marking of public fallout shelter on otherwise private property established a precedent for the conditional public uses of American real estate. Fallout shelter licenses emphasized that the public's right to the space was limited to "the sole purpose of temporarily sheltering persons during and after any and every actual or impending attack."[23] The extreme abnormality of the situation that would permit public use merely reinforced the enduring right of private property—that is, these spaces became public only according to the magnanimity (or perhaps, patriotism) of their owners. The public fallout shelter figured a tension between public accessibility and the authority of ownership, foreshadowing the privately owned public spaces so common in North American cities today. These contingently public spaces are notorious among critics for their security design details and distinctive signage delimiting the area, hours, and allowable activities in urban parks, plazas, and atria.[24] In exchange for their good behavior in these spaces, citizens are protected within them from the myriad threats of the surrounding city.

Clearly, bunker architecture and its city-scaled corollary, fortress urbanism, had (and have) messages to convey to American citizens. The material results of these modes of design were constant reminders that space was under control. Threats to the nation have been reconfigured in different decades, and the design of encapsulated communities and their structures have taken on new impetus and meanings. In retrospect, we can see architecture for civil defense as laying the material and discursive foundations for the citadels and streetscapes of the contemporary city. Of course, only certain spaces can be under the direct control of property owners, the surveillance of the state, or the disciplines of the social contract. Just as service workers and other employees inevitably pinpoint the

blind spots where they can escape the surveillance regimes of their workplaces, citizen behaviors always will slip through the cracks of an imperfect urban panopticism. Even when their lives ostensibly were at stake—as was claimed by civil defense experts during the early Cold War, and by the Department of Homeland Security after 2001—people found the means to reframe, resist, and subvert society's spaces of control.

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Thank you, finally, to my family, the kids, and to my life partner, Jennifer Blair.

NOTES

INTRODUCTION

1. This is a direct quotation from "Design for Survival," *Architectural Record,* January 1962, 128.

2. Lawrence J. Vale, *The Limits of Civil Defense in the USA, Switzerland, Britain and the Soviet Union: The Evolution of Policies since 1945* (New York: St. Martin's, 1987), 14–16; and Lewis Mumford, *The City in History: Its Origins, Its Transformations, and Its Prospects* (New York: Harcourt, Brace & World, 1961), 44–45. A recent reformulation of these ideas is Paul Hirst, *Space and Power: Politics, War and Architecture* (Cambridge: Polity, 2005).

3. According to Tracy C. Davis, *Stages of Emergency: Cold War Nuclear Civil Defense* (Durham, N.C.: Duke University Press, 2007), which compares the three countries, the British output of civil defense literature was dwarfed by the Canadian, which was dwarfed by the American (28); likewise, the British did nothing to provide public shelter, the Canadians surveyed shelters without marking or stocking them, while the Americans—though they stopped short of actually funding or legislating shelter construction—embarked on an extensive public shelter program that is the subject of the present volume (130). The only other comparative international study of Cold War civil defense is Vale, *The Limits of Civil Defense,* with chapters on the United States, Switzerland, Great Britain, and the Soviet Union. A scattering of national studies on civil defense outside the United States rounds out the literature. These rarely address architecture, per se, though one recent example from the United Kingdom focuses on military construction and continuity-of-government bunkers; Wayne D. Cocroft and Roger J. C. Thomas, *Cold War: Building for Nuclear Confrontation, 1946–1989* (Swindon: English Heritage, 2003).

4. The era of "containment" has been seen as crucial to the reformation of concepts and practices of gender, citizenship, labor politics, and many other aspects of society. See, for example, Mary L. Dudziak, *Cold War Civil Rights: Race and the Image of American Democracy* (Princeton, N.J.: Princeton University Press, 2000); Elaine Tyler May, *Homeward Bound: American Families in the Cold War Era,* rev. ed. (New York: Basic Books, 1999); Christian G. Appy, ed., *Cold War Constructions: The Political Culture of United States Imperialism, 1945–1966*

(Amherst: University of Massachusetts Press, 2000); Andrew Ross, "Containing Culture in the Cold War," in *No Respect: Intellectuals and Popular Culture* (New York: Routledge, 1989), 42–64; Jane Sherron De Hart, "Containment at Home: Gender, Sexuality, and National Identity in Cold War America," in *Rethinking Cold War Culture,* ed. Peter J. Kuznick and James Gilbert (Washington, D.C.: Smithsonian Institution, 2001), 124–55.

5. Michel Foucault, *The History of Sexuality,* vol. 1, *An Introduction* (New York: Vintage, 1990), 137, 142.

6. The term "society of modulation" is adapted from Gilles Deleuze, "Postscript on the Societies of Control" (1992), in *Rethinking Architecture: A Reader in Cultural Theory,* ed. Neil Leach (London: Routledge, 1997), 308–13. The phrase "imperfect panopticism" is developed in Matt Hannah, "Imperfect Panopticism: Envisioning the Construction of Normal Lives," in *Space and Social Theory: Interpreting Modernity and Postmodernity,* ed. Georges Benko and Ulf Strohmayer (Oxford: Blackwell, 1997), 344–59. See also Roy Boyne, "Post-Panopticism," *Economy and Society* 29, no. 2 (May 2000): 285–307. For Foucault's analysis of reform institutions see his *Discipline and Punish: The Birth of the Prison* (New York: Vintage Books, 1977).

7. Davis, *Stages of Emergency,* 72.

8. Foucault, *Discipline and Punish,* 167.

9. Henri Lefebvre, *The Production of Space,* trans. Donald Nicholson-Smith (Oxford: Blackwell, 1991).

10. Philip Will, "The Architect Serves His Community," *AIA Journal,* May 1962, 68. Other quotations, 66.

11. "Architects as Manpower," *AIA Journal,* November 1950, 195. From August 1950 to February 1951, the most anxious moments of the Korean War, the Committee on National Defense used the first pages of the *Journal* for alerts about "how architects can render professional aid to the Government agencies"; August 1950, 52.

12. Good design is subject to multiple competing interpretations because it "is nothing without its accompanying ideology," according to design historian Jules Lubbock, *The Tyranny of Taste: The Politics of Architecture and Design in Britain, 1550–1960* (New Haven, Conn.: Yale University Press, 1995), 22.

13. Annabel Jane Wharton, *Building the Cold War: Hilton International Hotels and Modern Architecture* (Chicago: University of Chicago Press, 2001); Tom Vanderbilt, *Survival City: Adventures among the Ruins of Atomic America* (New York: Princeton Architectural Press, 2002); Beatriz Colomina, *Domesticity at War* (Cambridge, Mass.: MIT Press, 2007). Another work that places architecture in a Cold War, foreign policy context is Jane C. Loeffler, *The Architecture of Diplomacy: Building America's Embassies* (New York: Princeton Architectural Press, 1998). The effect of Cold War paranoia on house design is discussed in the

chapter "Nature Preserved in the Nuclear Age: The Case Study Houses of Los Angeles, 1945," in Christine Macy and Sarah Bonnemaison, *Architecture and Nature: Creating the American Landscape* (London: Routledge, 2003), 223–92; and in Colomina, *Domesticity at War*. Finally, two complementary studies on the ideological debates expressed through architecture and planning in the different sectors of postwar Berlin provide one model for Cold War architectural history: see Francesca Rogier, "The Monumentality of Rhetoric: The Will to Rebuild in Postwar Berlin," in *Anxious Modernisms: Experimentation in Postwar Architectural Culture,* ed. Sarah Williams Goldhagen and Réjean Legault (Montreal: Centre Canadien d'Architecture/Canadian Centre for Architecture; Cambridge, Mass.: MIT Press, 2000), 165–90; and Greg Castillo, *Cold War on the Home Front: The Soft Power of Midcentury Design* (Minneapolis: University of Minnesota Press, 2010).

14. An exception is David F. Krugler, *This Is Only a Test: How Washington D.C. Prepared for Nuclear War* (New York: Palgrave Macmillan, 2006), 28–43, which discusses urban dispersal plans for the capital city. Cf. Stephen J. Whitfield, *The Culture of the Cold War* (Baltimore: The Johns Hopkins University Press, 1991); Kenneth D. Rose, *One Nation Underground: A History of the Fallout Shelter* (New York: New York University Press, 2001); or the institutional history by B. Wayne Blanchard, *American Civil Defense, 1945–1984: The Evolution of Programs and Policies* (Emmitsburg, Md.: National Emergency Training Center, 1986).

15. In retrospect, I unconsciously adapted the term "bunker architecture" from an article on Vancouver architecture that argued architects Erickson-Massey's overall concept for Simon Fraser University (1963) marked "the transition into what was fondly called the 'Bunker' style"; see Douglas Shadbolt, "Postwar Architecture in Vancouver," in *Vancouver: Art and Artists, 1931–1983* (Vancouver: Vancouver Art Gallery, 1983), 118. Survey texts trace the ascendancy of Brutalism in North American architecture; see H. R. Hitchcock, *Architecture: Nineteenth and Twentieth Centuries,* 4th ed. (New York: Penguin, 1977), 577–81. However, the ubiquity of monolithic and forbidding concrete buildings is often ignored by architectural historians who foreground the restricted oeuvre of Louis Kahn as the key figure in the 1960s United States; e.g., the chapter titled "Louis I. Kahn and the Challenge of Monumentality," in William Curtis, *Modern Architecture since 1900,* 2nd ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1987), 306–16. The popularity of the style for public buildings is clearly documented in Lois Craig et al., *The Federal Presence: Architecture, Politics, and Symbols in United States Government Buildings* (Cambridge, Mass.: MIT Press, 1978), 516–26. Readers need only consult their own university campuses, government complexes, or public schools to find examples of bunker architecture from the period. Selections include Esherick, Olsen & DeMars, Wurster Hall, University of California, Berkeley, 1964; Caudill Rowlett Scott, Larsen Hall (Graduate School of Education), Harvard

University, 1965; Skidmore Owings & Merrill (SOM), American Republic Insurance Company, Des Moines, Iowa, 1965; Frank Gehry, American School of Dance, Hollywood, 1968; Cerny Associates, South High School, Minneapolis, Minnesota, 1970; Gordon Bunshaft of SOM, Lyndon Baines Johnson Library and Museum, Austin, Texas, 1971; and the original campus buildings for the University of Illinois at Chicago Circle, 1965–70, by Walter Netsch of SOM. See also chapters 6 and 7 for further built examples and discussion of the historiography of this architecture.

16. Hirst, *Space and Power,* 155–66, demonstrates the importance of Foucault's concept of discursive formation to understanding architecture as something more than the singular result of authorial intention. David Campbell, *Writing Security: United States Foreign Policy and the Politics of Identity,* 2nd ed. (Minneapolis: University of Minnesota Press, 1998), 12–13, argues for a "logic of interpretation" in Cold War foreign policy studies rather than one of explanation.

17. Michael S. Sherry, *In the Shadow of War: The United States since the 1930s* (New Haven, Conn.: Yale University Press, 1995). Sherry's framework has inspired much scholarship of the militarization of everyday life in the United States. An excellent example, germane to the present book, is Laura McEnaney, *Civil Defense Begins at Home: Militarization Meets Everyday Life in the Fifties* (Princeton, N.J.: Princeton University Press, 2000).

18. Murray Edelman, "Space and the Social Order," *Journal of Architectural Education* 32, no. 2 (1978): 3. Likewise, Hirst argues that defensive military structures equally "were a realm of power technique . . . [facilitating] the inspection and control of populations"; *Space and Power,* 180.

19. In architectural writing, a focus on the militarization of everyday environments is exemplified by scholarship on the securing, or "hardening," of urban and public spaces. The word "hardening," coined within the terminology of Cold War defense, is now commonly used in architectural criticism as a defining characteristic of "fortress urbanism"; see Mike Davis, *City of Quartz: Excavating the Future in Los Angeles* (New York: Vintage, 1992); and the essays in Nan Ellin, ed., *Architecture of Fear* (New York: Princeton Architectural Press, 1997); and in Michael Sorkin, ed., *Variations on a Theme Park: The New American City and the End of Public Space* (New York: Hill & Wang, 1992). Geographers also have taken up the theme; see, for instance, part III of Stephen Graham, ed., *Cities, War, and Terrorism: Towards an Urban Geopolitics* (Oxford: Blackwell, 2004), 247–329.

1. HYPOTHETICAL HIROSHIMAS

1. I borrow the phrase from an essay by Susan Sontag on science fiction films during the Cold War, "The Imagination of Disaster" (1961), reprinted in *Science Fiction: A Collection of Critical Essays,* ed. Mark Rose (Englewood Cliffs, N.J.: Prentice Hall, 1976).

2. McEnaney, *Civil Defense Begins at Home,* 11, recounts a civil defense official making the comparison between atomic attack and natural disasters in relation to a series of blizzards that swept across the United States just as federal civil defense began operations in January 1951. On metaphors in political discourse see Neil Smith and Cindi Katz, "Grounding Metaphor: Towards a Spatialized Politics," in *Place and the Politics of Identity,* ed. M. Keith and S. Pile (London: Routledge, 1993), 69.

3. Paul Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (New York: Pantheon, 1985), 14–15, 65–69; Rose, *One Nation Underground,* devotes chapter 2 to the nuclear apocalyptic, drawing on Paul Brians, *Nuclear Holocausts: Atomic War in Fiction* (Kent, Ohio: Kent State University Press, 1987).

4. For an analysis of the representations of World War II bomb damage in the context of wartime propaganda, see Nicola Lambourne, *War Damage in Western Europe: The Destruction of Historic Monuments During the Second World War* (Edinburgh: Edinburgh University Press, 2001). For the legacy of images of destruction see Carola Hein, "The Atomic Bomb and Kenzo Tange's Hiroshima Peace Center," in *Out of Ground Zero: Case Studies in Urban Reinvention,* ed. Joan Ockman (Munich: Prestel Verlag; New York: Temple Hoyne Buell Center, 2002), 62–83.

5. "The Story of This Story," *Collier's,* August 5, 1950, 11. Architects had been involved since World War II in the study of "Oriental" standards of building. Antonin Raymond, an American-trained architect repatriated from Japan in 1942, put his knowledge of Japanese construction to work building fully furnished *tatami* tenements to determine how best they would burn under attack; see his *Autobiography* (Rutland, Vt.: C. E. Tuttle, 1973), 188–89; and Vanderbilt, *Survival City,* 70.

6. "Nuclear War in St. Louis: One Year Later," *Nuclear Information* 2, no. 1 (September 1959).

7. Vale, *The Limits of Civil Defense,* 24.

8. "Hiroshima, U.S.A: Can Anything Be Done About It?" *Collier's,* August 5, 1950, 11.

9. Gwendolyn Wright, *Building the Dream: A Social History of Housing in America* (Cambridge, Mass.: MIT Press, 1981), especially chapter 7. See also Nayan Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown* (Berkeley: University of California Press, 2001).

10. *Civil Defense: The Architect's Part* (Washington, D.C.: AIA, 1951), 20. Clarence S. Stein, answering the question "do new towns provide safety?" in "The PROS and CONS of Architecture for Civil Defense," *Progressive Architecture,* September 1951, 78. The Pittsburgh mayor's speech was reprinted in *American City,* April 1951, a magazine for city planners and administrators. See "Slums Serve as

Labs for Civil Defense, Fire Fighting," *American City,* June 1954, 159; Harold Hauf, "City Planning and Civil Defense," *Architectural Record,* December 1950, 99; and the numerous examples recounted in Matthew Farish, "Disaster and Decentralization: American Cities and the Cold War," *Cultural Geographies* 10, no. 2 (2003): 125–48.

11. See Ockman, *Out of Ground Zero.*

12. For instance, the great Chicago fire of 1871, and conflagrations that destroyed much of downtown Boston and Baltimore in 1872 and 1904, respectively; see Christine Meisner Rosen, *The Limits of Power: Great Fires and the Process of City Growth in America* (Cambridge: Cambridge University Press, 1986).

13. "Fringe Cities: Answer to the A-Bomb. Blueprints Call for Spreading of Big Centers," *U.S. News and World Report,* October 7, 1949, 18–19. The film *Survival Under Atomic Attack* can be viewed at www.archive.org/details/Survival1951.

14. Meeting, September 30, October 1–2, 1951; and Minutes, Annual Meeting of Board of Directors, AIA, 1955; both in Board/Excomm. Minutes; American Institute of Architects Archives (hereafter AIAA).

15. Albert Mayer, "A New-Town Program," *AIA Journal,* January 1951, 5–10.

16. Historian David F. Krugler, *This Is Only a Test,* has studied in detail evacuation plans and their connections with the discourse of urban dispersal in the 1950s.

17. The transcript of Lapp's talk, based on his numerous publications regarding dispersal, is in "Text of Speeches, 1951 Chicago Convention," AIA Office Files Misc.; Archives Box 162; AIAA. Cf. Mayer and Lapp in "PROS and CONS of Architecture for Civil Defense," 75 and 80, respectively.

18. Clarence Stein, *Toward New Towns for America* (Liverpool: Liverpool University Press, 1951), 5.

19. "PROS and CONS of Architecture for Civil Defense," 75. The key proponent of urban decentralization in the context of defense was city planner Tracy Augur; for his background, views, and dispersal plans for Washington, D.C., see Krugler, *This Is Only a Test,* 28–43. See also Michael Quinn Dudley, "Sprawl as Strategy: City Planners Face the Bomb," *Journal of Planning Education and Research* 21 (2001): 52–63; and Farish, "Disaster and Decentralization," 136–38.

20. Ann Markusen, "Cold War Workers, Cold War Communities," in Kuznick and Gilbert, *Rethinking Cold War Culture,* 35–60. See also Greg Hise, *Magnetic Los Angeles: Planning the Twentieth-Century Metropolis* (Baltimore: The Johns Hopkins University Press, 1997), 117–52. Although the NSRB, the General Services Administration, and the executive branch all attempted to make dispersal policy for new federal buildings at Washington in the early 1950s, they were largely unsuccessful. Eventually, with the suburban siting of the new Atomic Energy Commission and Central Intelligence Agency buildings in 1955, dispersal began to occur without an effective overarching policy. Ironically, both sites were within the

likely "zone of destruction" should a contemporary nuclear weapon target the White House; see Krugler, *This Is Only a Test,* 32–43, 59–63, 101–5.

21. For the Interstate Highway Act, see Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States* (New York: Oxford University Press, 1985), 249–50.

22. Ibid., chapters 11–12; Nancy A. Massey and Douglas S. Denton, *American Apartheid: Segregation and the Making of the Underclass* (Cambridge, Mass.: Harvard University Press, 1993); Thomas Sugrue, *The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit* (Princeton, N.J.: Princeton University Press, 1996); Arnold R. Hirsch, "Containment on the Home Front: Race and Federal Housing Policy from the New Deal to the Cold War," *Journal of Urban History* 26, no. 2 (January 2000): 158–89. Among other aspects, the lack of public transportation to regional malls ensured a patronage of white suburban car owners; see Lizabeth Cohen, "From Town Center to Shopping Center: The Reconfiguration of Marketplaces in Postwar America," *American Historical Review* 101, no. 4 (October 1996): 1050–81.

23. Representative John F. Kennedy warned Truman as early as 1949 that the lack of civil defense planning exposed the nation to an "atomic Pearl Harbor"; quoted in McEnaney, *Civil Defense Begins at Home,* 14.

24. Vale, *The Limits of Civil Defense,* 58.

25. For this historical overview of early civil defense I have used McEnaney, *Civil Defense Begins at Home;* Blanchard, *American Civil Defense;* and Rose, *One Nation Underground,* 26–41.

26. McEnaney, *Civil Defense Begins at Home,* 42–47.

27. Despite this revelation in 1951, the FCDA made the same request backed by the same lack of research in 1952 and 1953; Blanchard, *American Civil Defense,* 2–4.

28. *Survival Under Atomic Attack* (Washington, D.C.: Government Printing Office, 1950). For discussion of the distribution of this publication (and of the film based on it), see McEnaney, *Civil Defense Begins at Home,* 53, 170 note 47.

29. Donald Robinson, "If H-Bombs Fall . . ." *Saturday Evening Post,* May 25, 1957, 111.

30. *Walt Builds a Family Fallout Shelter* ([Washington, D.C.]: Office of Civil and Defense Mobilization/[Washington, D.C.]: The National Concrete Masonry Association, 1959).

31. Sarah A. Lichtman, "Do-It-Yourself Security: Safety, Gender, and the Home Fallout Shelter in Cold War America," *Journal of Design History* 19, no. 1 (2006): 39–55.

32. Rose, *One Nation Underground,* 79–81 and 186–87, cites the relevant statistics on home shelter construction.

33. McEnaney, *Civil Defense Begins at Home,* 38, 41.

34. George Kennan, "The Necessity for Containment" (1946), excerpted in *A History of Our Time: Readings on Postwar America,* 5th ed., ed. William H. Chafe and Harvard Sitkoff (New York: Oxford University Press, 1999), 14–19.

35. For a discussion of whiteness as a contemporary identity category, see George Lipsitz, *The Possessive Investment in Whiteness: How White People Profit from Identity Politics* (Philadelphia: Temple University Press, 1998).

36. Boyer, *By the Bomb's Early Light,* 3–26.

37. Robert L. Ivie, "Fire, Flood, and Red Fever: Motivating Metaphors of Global Emergency in the Truman Doctrine Speech," *Presidential Studies Quarterly* 29, no. 3 (September 1999): 582–83.

38. Quoted in Robinson, "If H-Bombs Fall . . . ," 25.

39. Gary A. Kreps, "Disaster: Systemic Event and Social Catalyst," in *What Is a Disaster? Perspectives on the Question,* ed. E. L. Quarantelli (New York: Routledge, 1998), 35. In addition to a number of university-based institutes founded at the time, the National Research Council founded its Committee on Disaster Studies in 1952. Typical research contractors included RAND, Associated Universities, the Stanford Research Institute, and the National Opinion Research Center at the University of Chicago. See Farish, "Disaster and Decentralization," 134–35; McEnaney, *Civil Defense Begins at Home,* 30–34, who discusses many of the psychiatric and sociological tests sponsored by civil defense planners; and Guy Oakes, *Imaginary War: Civil Defense and American Cold War Culture* (New York: Oxford University Press, 1994), 84–104, for descriptions of the FCDA-sponsored disaster exercises, such as Operation Alert, held annually 1954–61.

40. Robinson, "If H-Bombs Fall . . . ," 113. Test cases included everything from natural disasters and civil defense exercises to industrial accidents. Recent disaster research has confirmed that the disaster myths listed in this chapter are still common in the present day, particularly in mass media representations of disaster: Henry W. Fischer III, *Response to Disaster: Fact versus Fiction and Its Perpetuation,* 2nd ed. (Lanham, Md.: University Press of America, 1998); for a description of the typical disaster myths, see 14–22.

41. McEnaney, *Civil Defense Begins at Home,* 33–34; May, *Homeward Bound,* 90–93; Lichtman, "Do-It-Yourself Security," 48–50. For the gendered civil defense hierarchy, see Richard Gerstell, *How to Survive an Atomic Bomb* (Washington, D.C.: Combat Forces Press, 1950), 123. Gerstell also provides fashion notes for his female readers, stating that they should wear "long-sleeved dresses and stockings outdoors, even in summer" (32), and later reiterating that "women should never go barelegged" (107). Andrew D. Grossman, *Neither Dead nor Red: Civil Defense and American Political Development during the Early Cold War* (New York: Routledge, 2001), 103, argues against the gendered critique of civil defense, but from my experience in the archives he is drawing on exceptions that prove the rule.

42. Gary A. Kreps and Susan Lovegren Bosworth, *Organizing, Role Enactment, and Disaster: A Structural Theory* (Newark: University of Delaware Press, 1994), 169. Vale points to many of the same "practical weaknesses" in the natural/nuclear disaster analogy; *Limits of Civil Defense,* 86–87.

43. Tonnage is an explosive measurement based on TNT. Hiroshima was destroyed by a fifteen-kiloton bomb; that is, comparable to fifteen thousand tons of TNT. H-bombs are quantified in megatons, or millions of tons; that is, a fifteen-megaton bomb is equivalent to fifteen million tons of TNT, or one thousand times the explosive power of what was dropped on Hiroshima.

44. P. Herbert Leiderman and Jack H. Mendelson, "Some Psychiatric and Social Aspects of the Defense-Shelter Program," *New England Journal of Medicine* 266, no. 22 (May 31, 1962): 1150.

45. Drawing on debates over environmental racism, scholars have shown that economically and racially marginalized communities are more susceptible to harm from disasters because of proximity, population density, and lack of emergency services, as well as poorly designed, constructed, and maintained buildings. See Robert Bolin and Lois Stanford, "Constructing Vulnerability in the First World: The Northridge Earthquake in Southern California, 1994," in *The Angry Earth: Disaster in 352 Anthropological Perspective,* ed. Anthony Oliver-Smith and Susanna M. Hoffman (London: Routledge, 1999), 89–112; as well as the work of Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York: Vintage, 1999). For an overview see Noel Castree and Bruce Braun, "The Construction of Nature and the Nature of Construction," and the other articles in *Remaking Reality: Nature at the Millennium,* ed. Bruce Braun and Noel Castree (New York: Routledge, 1998), 3–42.

46. "PROS and CONS of Architecture for Civil Defense," 71. See also Fred Severud and Anthony Merrill, *The Bomb, Survival, and You: Protection for People, Buildings, Equipment* (New York: Reinhold, 1954).

47. "Buildings Can Be Designed to Resist A-Bombs" and "Cost of Blast Proof Construction," *Architectural Record,* August 1952, 182–86.

48. Robert L. Corsbie, "Nuclear Effects and Civil Defense," *AIA Journal,* November 1959, 86.

49. Fenestra advertisement, *Architectural Forum,* July 1954, 55. Cf. Concrete Reinforcing Steel Institute advertisement, *Architectural Forum,* January 1952, 94. These connections were made in the popular press as well; see a Grinnell Fire Protection Systems advertisement, *Time,* April 30, 1951, 73. For an explicit connection between environmental control systems and nuclear protection, see the Marlo Coil Company advertisement, *Architectural Record,* July 1955, 286, which describes "Washington's first A-bomb resistant building [the Armed Forces Institute of Pathology] air conditioned with MARLO equipment." A detailed account is "Fallout Shelters," *Architectural Forum,* April 1958.

50. My analysis of this project is based on three articles in the architectural and popular press, from which I have liberally interspersed quotations: "Architects Design a Bombed-Out Town," *Architectural Record,* July 1952, 185–87; "'Rescue Street' Built in Ruins," *Architectural Forum,* August 1952, 70–72; "If an Atom Bomb Hits—What Happens to a U.S. City," *U.S. News and World Report,* July 4, 1952, 26–27. See also the excellent chapter, "Acting Out Injury," on casualty makeup and civil defense rescue training in Davis, *Stages of Emergency,* 198–219.

51. "Survival Street" (NBC TV, 1956); 311.081; Motion Pictures Branch, National Archives, College Park, Maryland (hereafter NACP).

52. Michael Sorkin, "See You in Disneyland," in *Variations on a Theme Park,* 226. Disneyland opened in 1955. The term "imagineering" is a more recent conjunction of imagination and engineering.

53. "Architects Design a Bombed-Out Town," 186.

54. "At Elm & Main," *Time,* March 30, 1953.

55. Pauses and emphases in original. *House in the Middle* can be viewed at www.archive.org/details/Houseint1954.

56. Ralph Ellison, *Invisible Man* (New York: Random House, 1952); it won the National Book Award the following year.

57. R. G. Kimbell and John Fies, "Two Typical Wood-Frame Houses Exposed to Energy Released by Nuclear Fission" (Washington, D.C.: National Lumber Manufacturers Association, 1953), 14. This report is held in the AIA Library.

58. Ibid., 2, 14. The "back broken" quotation is from Samuel W. Matthews, "Nevada Learns to Live with the Atom," *National Geographic,* June 1953, 842. See also "35th U.S. Nuclear Blast Tests Tactical Weapon," *New York Times,* March 18, 1953.

59. "Outcasts of Yucca Flat," *Life,* March 30, 1953. More than two hundred companies and associations provided supplies and volunteers for Operation Cue; Federal Civil Defense Administration, *Cue for Survival* (Washington, D.C.: Government Printing Office, 1955), 159–62. In his nuclear apocalyptic novel *World Aflame: The Russian-American War of 1950* (New York: Dial, 1947), Leonard Engel is eerily clairvoyant about the meaning of these tests. Describing the aftermath of a nuclear attack on Chicago, he writes that in front of a shattered department store, "the mannequins were sometimes hard to tell from the corpses" (33).

60. McEnaney, *Civil Defense Begins at Home,* 54–55.

61. David Theo Goldberg, *Racist Culture: Philosophy and the Politics of Meaning* (Oxford: Blackwell, 1993), 4–7, 49–51; and Lisa Lowe, *Immigrant Acts: On Asian American Cultural Politics* (Durham, N.C.: Duke University Press, 1996), 2–3, 24–26. Michael Stanton, "The Rack and the Web: The Other City," in *White Papers, Black Marks: Architecture, Race, Culture,* ed. Lesley Naa Norle Lokko (Minneapolis: University of Minnesota Press, 2000), 116–44, takes up these concerns in his discussion of the racialized spaces of American cities.

62. Lance Hosey, "Hidden Lines: Gender, Race, and the Body in *Graphic Standards,*" *Journal of Architectural Education* 55, no. 2 (November 2001): 108. See also Paul Emmons, "Diagrammatic Practices: The Office of Frederick L. Ackerman and *Architectural Graphic Standards,*" *Journal of the Society of Architectural Historians* 64, no. 1 (March 2005): 4–21.

63. Dean MacCannell, "Baltimore in the Morning . . . After: On the Forms of Post-Nuclear Leadership," *Diacritics* 14 (Summer 1984): 40.

64. Edmund R. Purves, "The AIA in the New Economy," *AIA Journal,* December 1950, 249. By the "new economy" in his title, Purves seems to be referring to something akin to the "military-industrial complex," the term coined by President Eisenhower in his farewell address to the nation in January 1961.

2. SURVEYING THE COLD WAR LANDSCAPE

1. "A New Urgency, Big Things to Do—and What You Must Learn," *Life,* September 15, 1961, 96; see also "A Message to You from the President," 95; shelter plans, human interest stories, and advice, 98–108.

2. "Let's Prepare Shelters," *Life,* October 13, 1961, 4.

3. "Use and Limit of Shelters," *Life,* January 12, 1962, 4.

4. Tom Englehardt, *The End of Victory Culture: Cold War America and the Disillusioning of a Generation* (New York: Basic Books, 1995), 39–44. For another example, the "hostile arrows" metaphor would be deployed again in the introduction to a shelter development handbook for school administrators, *A Realistic Approach to Civil Defense: A Handbook for School Administrators,* produced by the American Association for School Administrators, the National Commission on Safety Education, and the National Education Association, in cooperation with the OCD-DOD (Washington, D.C.: Government Printing Office, 1966), 1.

5. "Let's Prepare Shelters," 4.

6. Rose, *One Nation Underground,* 152–60.

7. *Status of the Civil Defense Program* (Washington, D.C.: Department of Defense/Office of Civil Defense, 1969), 3.

8. Ron Robin, *The Making of the Cold War Enemy: Culture and Politics in the Military-Intellectual Complex* (Princeton, N.J.: Princeton University Press, 2001), discusses the making of "defense intellectuals" out of behavioral scientists. As well, Trevor J. Barnes and Matthew Farish, "Between Regions: Science, Militarism, and American Geography from World War to Cold War," *Annals of the Association of American Geographers* 96, no. 4 (2006): 812, argue that the call of militarization was "difficult to resist, representing enormously powerful actors and vast resources" that would become available to those who could render useful the epistemologies, techniques, and tools of their discipline.

9. Charles E. Fritz, quoted in David Allison, "Fallout Shelters at Once," *Architectural Forum,* February 1961, 127.

10. Godfrey Hodgson, *America in Our Time* (1976), excerpted in Chafe and Sitkoff, *A History of Our Time,* 78. Public shelters in urban areas were also appropriate to the Kennedy presidency, because, as Kennedy adviser J. K. Galbraith noted, a suburban shelter system would save Republicans and sacrifice Democrats; quoted in Rose, *One Nation Underground,* 160.

11. McEnaney, *Civil Defense Begins at Home,* charts the ways in which women and African Americans were engaged in civil defense planning; Rose, *One Nation Underground,* details the public debates.

12. "Use and Limit of Shelters"; and Warren R. Young, "Group Shelters Are a Start—the Facts Require Much More," *Life,* January 12, 1962, 4, 38–43.

13. Rose, *One Nation Underground,* 292 note 94, says that civil defense funding averaged only 0.19 percent of the total DOD budget from 1962 to 1970. However, the DOD budget averaged over 45 percent of the entire U.S. government budget in those years. Appropriations for the OCD totaled more than $900 million over its first seven years, when its annual budget fluctuated between $86 million and $240 million; beginning in 1968, civil defense appropriations began to drop significantly, below the $70 million mark annually; *The Budget of the United States Government* (Washington, D.C.: Government Printing Office, various years). Furthermore, in his measured account, *Limits of Civil Defense,* Vale notes that U.S. budget numbers never included civil defense outlays by states, municipalities, or private corporations, or the costs of specialized continuity of government bunkers (186); as he states, "even the largest civil defense programs in the world [e.g., Sweden, Switzerland, and the Soviet Union] tend to claim only a tiny fraction of the defense budget" (38).

14. Gerald E. Klonglan et al., *Adoption of Public Fallout Shelters: A 1964 National Study* (Ames: Iowa State University, Department of Sociology and Anthropology, 1966), 186–91.

15. Gene N. Levine, ed., *The American Public and the Fallout-Shelter Issue: A Nine-Community Survey* (New York: Columbia University, Bureau of Applied Social Research, 1964), 7, 9. To give them credit, the Columbia pollsters speculate that said "disabilities of womanhood" may be the result of "differing norms that govern the outlooks and expressions of opinion of men and women in our society."

16. Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1966* (Washington, D.C.: Government Printing Office, 1967), 25; Office of Civil Defense, *Status of the Civil Defense Program* (Washington, D.C.: Department of Defense, 1969), 5.

17. Blanchard, *American Civil Defense,* 19–23. The Federal Emergency Management Agency (FEMA) eventually inherited the survey data, which it transformed

into data for natural disaster shelter and relief programs. In his study *Atomic Bomb Cinema: The Apocalyptic Imagination on Film* (New York: Routledge, 2002), Jerome Shapiro argues against a cyclical or crisis chronology of nuclear fear; his statistics show a stable and increasing rate of production of atomic bomb films after 1945, with his modal year (forty-one films) being 1966 (171–72).

18. Office of Civil Defense, *Status of the Civil Defense Program* (1969), 3.

19. *Civil Defense: The Architect's Part,* 14. A survey by volunteers is covered in R. Evan Kennedy, "Can Existing Buildings and Their Occupants Be Protected?" in "The PROS and CONS of Architecture for Civil Defense," 68–69.

20. Pearson, Humphries & Jones, Architects, and Stelling, Lord-Wood & Van Suetendael, Planners, *Fallout Shelter Survey of Montgomery City and County, Alabama,* prepared for OCDM, 1959; Tulsa Metropolitan Area Planning Commission, with Harold Wise, Neutra & Alexander, and Larry Smith & Co., *Civil Defense Master Plan for the Central Business District* and *Plan for Central Tulsa,* both 1959; plus report and speech in file "Contra Costa County," in which Alexander tried to convince Los Angeles City Council of the need for a shelter survey; all in Pilot Shelter Surveys 1958–62; SAB, A & E Serv. Div.; TSD; OCD; RG 397; NACP.

21. "Fallout Shelter Surveys: A Guide for Architects and Engineers (draft)"; Publications Regarding Design and Engineering of Fallout Shelters, 1960–67; Technical Services Branch; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

22. See Office of Civil and Defense Mobilization, *OCDM Engineering Manual* (Washington, D.C.: Government Printing Office, 1960). Some research scientists condescendingly noted that one "reservoir of structure data is the Federal Shelter Survey . . . but these calculations were not very sophisticated"; quoted in J. H. Hubbell and L. V. Simpson, *Shielding against Gamma Rays, Neutrons, and Electrons from Nuclear Weapons: A Review and Bibliography,* National Bureau of Standards Monograph 69 (Washington, D.C.: Government Printing Office, 1964), 8.

23. Lyndon Welch, "Nuclear Warfare" (preliminary draft, July 26, 1961); Committee on Building Codes and Disaster Studies; Archives Box 466S; AIA Archives, Washington, D.C.

24. *Status of the Civil Defense Program* (1969), 3.

25. Allison, "Fallout Shelters at Once," 129.

26. Henry C. Heaney, "Twentieth-Century Caves" and editorial response in "Letters," *Architectural Forum,* May 1961, 188; emphasis in original. Heaney was reacting both to Allison's piece and to the anonymous editorial "Shall Civilization Live?" *Architectural Forum,* March 1961, 77–79.

27. Steuart Pittman, quoted in "Civil Defense Task Committee," *AIA Memo,* January 2, 1962, 2.

28. Statistics from Minutes, Construction Industry Advisory Committee Meeting, June 12, 1962; "Civil Defense, Construction Industry Advisory Committee"; Archives Box 388S; AIAA; and from *Status of the Civil Defense Program*

(1969), 7. Eventually, specialized courses were also taught for structural and mechanical engineers. The earliest sessions focused on teacher training for college professors who could introduce fallout shelter analysis courses into their curricula. By the end of 1962, the OCD had trained ninety-six faculty members in sixty-five departments of architecture and engineering (21 percent of all U.S. departments). These professors also taught off-campus courses for established professionals and presented a special series of workshops when the Cuban Missile Crisis seemed to necessitate an acceleration of survey work.

29. Hise, *Magnetic Los Angeles,* 56–85. For the variety of stakeholders in the research, see Wright, *Building the Dream,* 193–98. The insight about *existenzminimum* is that of Michael Sorkin, "War Is Swell," in *World War II and the American Dream: How Wartime Building Changed a Nation,* ed. Donald Albrecht (Washington, D.C.: National Building Museum; Cambridge, Mass.: MIT Press, 1995), 235.

30. "Civil Defense Task Committee," *AIA Memo,* January 2, 1962, 2.

31. Ibid.

32. Charles Harper, personal correspondence with the author by e-mail, July 7, 16, 17, 2007.

33. Jeu Foon, personal correspondence with Ed Hendricks, November 2002, shared with author.

34. Toltz, King, Duvall, Anderson and Associates, "Phase 2 Fallout Shelter Survey: Facilities to Which Entrance Was Denied," September 20, 1962; "Phase 2 Contract Completion Report," August 31, 1962; Letter, W. B. Strandberg, colonel, Corps of Engineers, to Whom It May Concern, April 9, 1962; Job File 4528; RG N92, Records of Toltz, King, Duvall, Anderson and Associates; Northwest Architectural Archives, University of Minnesota (NWAA).

35. Letter, R. R. Ryder, Toltz, King, Duvall, Anderson and Associates, to R. H. Hempler, Mobil Oil Company, January 23, 1963; Job File 4528; RG N92, Records of TKDA; NWAA.

36. Letter, Rodney Loehr to [Vice President Malcolm] Willey, October 27, 1961; "National Defense"; President's Office Papers, 1945–78; Box 97; University Archives, University of Minnesota. As a former U.S. Army historian who attended the Yalta Conference in 1945, an ex-CIA Nazi hunter, and the longtime commander of the U.S. Army Reserve's 483rd Strategic Intelligence Detachment, Loehr was well situated to understand the meanings, functions, and administration of the OCD fallout shelter program; see his obituary by Ben Cohen, "University Historian Rodney Loehr Dies," *Minneapolis Star Tribune,* October 20, 2005.

37. Donald W. Mitchell, *Civil Defense: Planning for Survival and Recovery* (Washington, D.C.: Industrial College of the Armed Forces, 1966), 46.

38. Office of Civil Defense, *Status of the Civil Defense Program* (1969), 11. The other 10 percent of building owners who refused the license did so for reasons of security, secrecy, existing plans for the space, or the inability to store supplies.

39. Office of Civil Defense, "Building Owners Role and Responsibilities in the National Fallout Shelter Program," in the series *Functions and Responsibilities of Building Owners, Local Governments, State Governments in the National Fallout Shelter Program* ([Washington, D.C.: Government Printing Office], 1962).

40. Captions on fallout shelter sign photographs, 397-MA, Still Pictures Branch, NACP. See also Tom Vanderbilt, "Cold War Graphics," *Print* 55, no. 4 (July/August 2001): 41–46; and the definitive history of the sign's design and mass production, by Bill Geerhart, "An Indelible Cold War Symbol: The Complete History of the Fallout Shelter Sign" (2010), http://knol.google.com/k/bill-geerhart/an-indelible-cold-war-symbol.

41. Office of Civil Defense, "Summary—National 'Shelter One' Project," May 25, 1962; Studies and Reports Related to Fallout Shelters, 1962–63; Regional Coordination Division; OCD; RG 397; NACP. Quotation not in original order.

42. Photographs and detailed descriptions of fallout shelter supplies can be found at www.civildefensemuseum.com.

43. Office of Civil Defense, "Building Floor Load Problems and Storing Shelter Supplies," memorandum, April 12, 1963; "Civil Defense, Construction Industry Advisory Committee"; Archives Box 388S; AIAA.

44. Department of Civil Defense, "Annual Report" (City Document No. 9), *Boston City Documents* (1966), 3.

45. Fallout shelter listings from *Boston City Record,* June 1, 1963; and various inventories in Studies and Reports Related to Fallout Shelters, 1962–63; Regional Coordination Division; and Records Related to OCD Annual Report; both OCD; RG 397; NACP.

46. Letter, L. W. Marsh, director, City of St. Paul Bureau of Civil Defense, to Bob Ryder, fallout shelter analyst, TKDA, October 17, 1962; Job File 4528; RG N92, Records of Toltz, King, Duvall, Anderson and Associates; NWAA.

47. Neil Harris, *Building Lives: Constructing Rites and Passages* (New Haven, Conn.: Yale University Press, 1999).

48. "Assistant Secretary Pittman Addresses the National Security Commission of the American Legion," OCD *Information Bulletin* 61 (March 22, 1963).

49. Ibid.

50. Louise Appleton, "Distillations of Something Larger: The Local Scale and American National Identity," *Cultural Geographies* 9 (2002), 422. Cf. Grossman, *Neither Dead nor Red.*

51. "Director Durkee Describes the Meaning of Civil Defense," OCD *Information Bulletin* 129 (February 19, 1965).

52. Alice L. George, *Awaiting Armageddon: How Americans Faced the Cuban Missile Crisis* (Chapel Hill: University of North Carolina Press, 2003), 67. The PF 40 minimum was made permanent policy in a DOD memorandum, February 25, 1963. Description of the changes resulting from the Cuban crisis are in Steuart

Pittman, *National Civil Defense Readiness,* a report to the presidents of the U.S. Conference of Mayors, the American Municipal Association, and the National Association of County Officials, October 27, 1962; both in "Civil Defense 1958–61"; Archives Box 334S; AIAA.

53. Memorandum, Edward J. Sheridan, deputy assistant secretary of defense for properties and installations, to the assistant secretaries of the army and navy, and the special assistant for installations, Office of the Secretary of the Air Force, December 15, 1961; "TM61-3: Minimum Requirements for Group Community Shelters"; Publication Materials Concerning Fallout Shelters, 1962–67; TSB; A&E Serv. Div.; TSD; OCD; RG 397; NACP.

54. Memorandum no. 54-62, William P. Durkee, director of federal assistance, OCD, to all regional directors, August 3, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

55. Wilbur Zelinsky, *Nation into State: The Shifting Symbolic Foundations of American Nationalism* (Chapel Hill: University of North Carolina Press, 1988), 178.

56. Lyrics and music originally published in *Broadside* 3 (April 1962) and 22 (February 1963), respectively; republished as the liner notes to the compilation album *Broadside Ballads,* vol. 1, *Introducing Broadside* (New York: Folkways [05301], 1963).

57. The listserv query was sent to the e-mail lists comprising members of the Society of Architectural Historians, the Vernacular Architecture Forum, and H-Urban (H-Net) in January and February 2007. Informative responses not cited in the text also were received from Catherine Bishir, Gretchen Borges, Ed Hendricks, Hugh Howard, Erik C. Maiershofer, Kathleen W. Pagan, and Michael Ann Williams. On children's fears see Rose, *One Nation Underground,* 138–40; and on adults' projections of children's fears see JoAnne Brown, "'*A* is for *Atom, B* is for *Bomb*': Civil Defense in American Public Education, 1948–1963," *Journal of American History* 75, no. 1 (June 1988): 75 ff.

58. Letter, Stanley J. Wenberg, vice president, University of Minnesota, to Colonel W. B. Strandberg, district engineer, Corps of Engineers, St. Paul, June 25, 1963; "National Defense"; President's Office Papers, 1945–78; Box 97; University Archives, University of Minnesota.

59. "Join in an Open Letter to President Kirk and President Park," petition, April 1961, Central Files, Box 62, folder 12, Columbia University Archives.

60. Office of Civil Defense, "Summary—National 'Shelter One' Project," May 25, 1962; Studies and Reports Related to Fallout Shelters, 1962–63; Regional Coordination Division; OCD; RG 397; NACP.

61. Letter, Richard Niemi to O. Meredith Wilson, president, University of Minnesota, January 29, 1963; "National Defense"; President's Office Papers, 1945–78; Box 97; University Archives, University of Minnesota.

62. *Protection Factor 100* (Office of Civil Defense/Department of Defense, 1962).

63. Michael Sorkin, "War Is Swell," 234.

64. Defense Civil Preparedness Agency, *Shelter Survey Technician Course* (Washington, D.C.: Government Printing Office, 1979), 1–8. To be hired, students had to be U.S. citizens, have completed one year of architecture or engineering school, and pass this course, taken by classroom or home study, with a 70 percent grade.

65. Jeu Foon, personal correspondence.

66. John Edwards Jr., telephone interview with author, July 12, 2007.

67. "Secretary McNamara Discusses 'Facts on the Shelter Debate,'" OCD *Information Bulletin* 37 (July 20, 1962).

3. SHELTERING COMMUNITIES

1. *Community Shelter Planning* ([Washington, D.C.]: Office of Civil Defense/U.S. Army Pictorial Center, 1966). Clips and stills courtesy of www.conelrad.com, the editors of which sourced a copy of this rare film and have posted a fine analysis of it. The slogan appears again, for instance in Office of Civil Defense, *New Dimensions: Annual Report 1970* (Washington, D.C.: Government Printing Office, 1971), 11.

2. For federal requirements contributing to the early development of the urban planning profession, see Thomas W. Hanchett, "Roots of the 'Renaissance': Federal Incentives to Urban Planning, 1941 to 1948," in *Planning the Twentieth-Century American City,* ed. Mary Corbin Sies and Christopher Silver (Baltimore: The Johns Hopkins University Press, 1996), 283–304. See also Mel Scott, *American City Planning since 1890: A History Commemorating the Fiftieth Anniversary of the American Institute of Planners* (Berkeley: University of California Press, 1969): for membership numbers, 467 ff., 614; for the effect of federal programs on the development of the profession, 464–67 and passim.

3. Andrew Shanken, *194X: Architecture, Planning, and Consumer Culture on the American Home Front* (Minneapolis: University of Minnesota Press, 2009).

4. Jennifer S. Light, *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America* (Baltimore: The Johns Hopkins University Press, 2003), 6.

5. Stanford Research Institute, *CSP Management Development,* vol. 1, *Summary* ([Menlo Park, Calif.:] Stanford University, Stanford Research Institute, 1965), 29. The collection of reports is held in Project Files 1965–66; PDD; POD; OCD; RG 397; NACP.

6. Stanford Research Institute, *CSP Management Development: Development of CSP Evaluation and Guidance Procedures* (1965), 8. HHFA was replaced in 1965

by Housing and Urban Development (HUD); because CSPs looked to programs initiated by HHFA, I refer to that bureaucratic incarnation.

7. Light, *From Warfare to Welfare,* 56.

8. Stanford Research Institute, *CSP Management Development: Development of CSP Evaluation and Guidance Procedures,* 16. For the SRI's assessment of inconsistent local planning agencies, see *CSP Management Development: Urban Planning Relationships to CSP* (1965), 3. By 1967, half of CSPs had been prepared by consultants, according to the Consulting Services Corp., *Community Shelter Plan Reconnaissance Study for the Twin Cities Metropolitan Area* (St. Paul: Minnesota State Department of Building Development, 1967).

9. Stanford Research Institute, *CSP Management Development: Local Planning Capability and the CSP Program* (1965), 3. In appendix D, SRI helpfully includes graphs comparing appropriations and disbursements for the Urban Planning Assistance Program, Urban Renewal Plans, and the Comprehensive Transportation Planning Program.

10. Ibid., 52–55.

11. Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1966* (Washington, D.C.: Government Printing Office, 1967), 29.

12. Office of Civil Defense, *Committees for Community Shelter Planning* (Washington, D.C.: Government Printing Office, 1966), 34.

13. Both quotations are from the Office of Civil Defense, *New Dimensions,* 11; for further description of the CSP process, see Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1966,* 28–30, 69.

14. For the rise of transportation engineering, see Peter Hall, *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century,* rev. ed. (Oxford: Blackwell, 1996), 359–63.

15. *Community Shelter Plan: Tri-City Area, Michigan* (Lansing: Tri-City Regional Planning Commission, [1966]), 89; in Project Files 1965–66; PDD; POD; OCD; RG 397; NACP.

16. Ibid., 84–85.

17. Stanford Research Institute, *CSP Management Development: CSP Process Evaluation and Development,* 15–16.

18. *Community Shelter Plan, Seven City Metropolitan Area, Minneapolis-St. Paul, Minnesota: Step 1A, Preliminary Analysis,* prepared by Nason, Wehrman, Knight & Chapman, Inc., March 1969, 12–13, 42.

19. Department of Civil Defense, *Annual Report* (City Document no. 9), *Boston City Documents* (1968), 3.

20. *Community Shelter Plan, Seven City Metropolitan Area,* 19.

21. Dallas City-County Civil Defense and Disaster Commission, *Fallout Shelters in Dallas County* (Dallas: The Commission, 1970); emphasis in the original.

22. According to the Lane County Civil Defense Agency, *Lane County Community Shelter Plan* (Eugene, Ore.: The Agency and The Central Lane Planning

Council, 1968), "If you live in one of the first three houses along Kirk-Bryant Road north of Clear Lake Road, you should walk to the shelter at the Reservoir Control House of Fern Ridge Dam for shelter upon hearing the warning signal." Although CSPs suggested expedient shelter for those in rural and other deficit areas, federal civil defense agencies do not seem to have sponsored research into techniques until the 1970s; see Cresson H. Kearny, "Expedient Shelter Construction and Occupancy Experiments," *Oak Ridge National Laboratory Report* 5039 (1976).

23. Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1966,* 3.

24. *Occupying a Public Shelter* (Washington, D.C.: Army Pictorial Center/Civil Defense Staff College, 1965).

25. Presidential aides kept the Emergency Action Papers, including the declaration of martial law, on hand at all times; Krugler, *This Is Only a Test,* 156–62.

26. Donald N. Michael, "Some Results of a Study of Procedures for Managing Large Fallout Shelters," in *Human Problems in the Utilization of Fallout Shelters: Studies of Behavior in Stressful Environments,* ed. George W. Baker and John H. Rorher. A symposium held at the National Academy of Sciences-National Research Council, Washington, D.C., February 11–12, 1960 (Washington, D.C.: National Academy of Sciences and National Research Council, Pub. 800, 1960; repr. 1962), 190, 192.

27. Ibid., 182. Regarding cigarettes, the OCD publication *Shelter Management Plan* (Washington, D.C.: Department of Defense, 1963) notes: "Smoking shall be controlled, and prohibited only if absolutely necessary" (2). This handbook incorporates blank pages for the manager to draw the "Floor Plan Layout" of the shelter.

28. City of Livermore, California, *Community Shelter Report* (1962), 11.

29. Ibid., 61.

30. Michael, "Some Results of a Study of Procedures," 186.

31. Charles P. Loomis, "Toward Systemic Analysis of Disaster, Disruption, Stress and Recovery: Suggested Areas of Investigation," in *Behavioral Science and Civil Defense,* ed. George W. Baker and Leonard S. Cottrell (Washington, D.C.: National Academy of Sciences and National Research Council, Pub. 997, 1962), 121. See also Baker and Rohrer, *Human Problems in the Utilization of Fallout Shelters.* This research went on throughout the 1960s, as attested to by OCD annual reports, and by the overviews published in Eugene P. Wigner, ed., *Survival and the Bomb: Methods of Civil Defense* (Bloomington: Indiana University Press, 1969). Several of the experiments in shelter habitability are described in detail in Tracy C. Davis, *Stages of Emergency,* 130–50.

32. Leiderman and Mendelson, "Some Psychiatric and Social Aspects of the Defense-Shelter Program," 1153.

33. Sidney E. Cleveland et al., "Effects of Fallout Shelter confinement on Family Adjustment," *Archives of General Psychiatry* 8 (January 1963), 54.

34. Ralph L. Garrett, "Social Science Research Program: Review and Prospect," in Baker and Cottrell, *Behavioral Science and Civil Defense,* 116; summaries of habitability studies, 115–16.

35. James W. Altman, "Laboratory Research on the Habitability of Public Shelters," in Baker and Rohrer, *Human Problems in the Utilization of Fallout Shelters,* 166.

36. Tridib Banerjee and William C. Baer, *Beyond the Neighborhood Unit: Residential Environments and Public Policy* (New York: Plenum, 1984), 127–32; Christopher Silver, "Neighborhood Planning in Historical Perspective," *Journal of the American Planning Association* 51, no. 2 (1985): 161–74; Hall, *Cities of Tomorrow,* 128–30.

37. *The Schoharie Valley Townsite: A Protected Community for the Nuclear Age* (Ithaca, N.Y.: Cornell University, College of Architecture, 1960), 30, 36. A detailed press release and photographs are preserved in "Civil Defense, 1958–61," Archives Box 334S; AIAA.

38. Ibid., 2.

39. M. Perry Chapman, interviewed in Vanderbilt, *Survival City,* 124.

40. "Nuclear Cities Coming," *Science News Letter,* December 23, 1961, 412.

41. Mumford, *The City in History,* 572.

42. Ibid., 480–81. See also Mumford's subsequent chapter, "Suburbia—and Beyond," 482–524.

43. *The Schoharie Valley Townsite,* 38.

44. Walter Wager, "Life Inside a Glacier," *Saturday Evening Post,* September 10, 1960, 24. See also Walter Wager, *Camp Century: City Under the Ice* (Philadelphia: Chilton, 1962). Descriptions of Camp Century and miscellaneous quotations are from Wager's article and book, and from Lee David Hamilton, *Century: Secret City of the Snows* (New York: G.P. Putnam's, 1963); Charles Michael Daugherty, *City Under the Ice: The Story of Camp Century* (New York: Macmillan, 1963); and George J. Dufke, "Nuclear Power for the Polar Regions," *National Geographic,* May 1962, 712–30. See also the 1961 U.S. Army film, *The Story of Camp Century—the City Under Ice.*

45. Wager, *Camp Century,* 2.

46. Ibid., 1, 125.

47. Wager, "Life Inside a Glacier," 61.

48. Hamilton, *Century,* 93; emphasis in the original.

49. *The Schoharie Valley Townsite,* 7; previous quotations, iii.

50. Ibid., 51–52.

51. Mumford, *The City in History,* 481.

4. DESIGN INTELLECTUALS

1. As reflected in a massive report commissioned by the AIA on the state of the profession: Turpin C. Bannister, ed., *The Architect at Mid-Century: Evolution and Achievement* (New York: Reinhold, 1954), 73–74, 452–54.

2. Magali Sarfatti Larson, *Behind the Postmodern Facade: Architectural Change in Late Twentieth-Century America* (Berkeley: University of California Press, 1983), 15–23. For historical perspective on the position of architects in society and the building industry see Bernard Michael Boyle, "Architectural Practice in America, 1865–1965—Ideal and Reality," in *The Architect: Chapters in the History of the Profession,* ed. Spiro Kostof (1977; repr., Berkeley: University of California Press, 2000), 309–44; and Andrew Saint, *The Image of the Architect* (New Haven, Conn.: Yale University Press, 1983). While both Boyle and Saint place the rise of architecture as a business in the nineteenth century, they are in agreement that the postwar period saw new approaches to practice and entrepreneurialism that attempted to expand the scope, status, and authority of the architectural profession.

3. From early on in the Cold War there was a vocal, high-profile resistance to both nuclear arms and civil defense plans, despite our popular image of 1950s conformity in the United States. See Elizabeth Walker Mechling and Jay Mechling, "The Campaign for Civil Defense and the Struggle to Naturalize the Bomb," in *Critical Questions: Invention, Creativity and the Criticism of Discourse,* ed. William L. Nothstine, Carole Blair, and Gary A. Copeland (New York: St. Martin's, 1994), 125–54. For a broad discussion of Cold War dissensus see Margot A. Henriksen, *Dr. Strangelove's America: Society and Culture in the Atomic Age* (Berkeley: University of California Press, 1997); and the essays in Kuznick and Gilbert, *Rethinking Cold War Culture.*

4. Margaret Crawford, "Can Architects Be Socially Responsible?" in *Out of Site: A Social Criticism of Architecture,* ed. Diane Ghirardo (Seattle: Bay Press, 1991), 27–31.

5. David Monteyne, "Shelter from the Elements: Architecture and Civil Defense in the Early Cold War," *Philosophical Forum* 35, no. 2 (Summer 2004): 179–99.

6. Albrecht, *World War II and the American Dream.*

7. Letter, Edward Kemper, executive director, AIA, to Douglas Wm. Orr, president, AIA, June 6, 1947; folder title, "Committee on Nuclear Facilities"; Archives Box 348S; AIAA.

8. Letter, Edmund R. Purves to Douglas Wm. Orr, president, AIA, June 26, 1947; "AIA Office Files, Secretary, Correspondence, 1947"; Box 4, Series 1, RG 801; AIAA.

9. Letter, Thomas FitzPatrick, chair, AIA Committee on Nuclear Facilities, to Morris Ketchum Jr., chair, Committee on National Defense, September 7, 1951;

"CD-AIA-NDC"; Archives Box 557S; AIAA. McEnaney also discusses these difficulties in *Civil Defense Begins at Home,* 28–30.

10. "Committee Structure of the AIA," 1952; "Structures and Services/Organizational Directory, 1951–1964"; Box 1, Series 7, RG 803; AIAA.

11. Edmund R. Purves, "The AIA in the New Economy," *AIA Journal,* December 1950, 248.

12. Purves's initial skepticism about civil defense is reflected in his letter to Orr, June 26, 1947; see this chapter, note 8.

13. *Civil Defense: The Architect's Part,* 10.

14. Ibid., 3. Orr was also the chair of the Committee on National Defense.

15. In Purves's obituary, *AIA Journal* editor Henry Saylor would pinpoint the attitude that the executive director, a man who led with quiet resolve, hoped American architects would take toward civil defense participation: "It is easier for a shy man to enlist and fight than to argue about one's duty and responsibility." Henry H. Saylor, "Edmund Randolph Purves FAIA, 1897–1964," *AIA Journal,* May 1964, 73; see also Purves's obituary in *Architectural Record,* May 1964, 11, which notes that one of the honors he had received was a commendation from the AEC.

16. Memorandum, Walter A. Taylor, director, Department of Education and Research, AIA, to Douglas Orr, chairman, Committee on National Defense, October 6, 1950; "Committee on National Defense"; Archives Box 348S; AIAA.

17. *Civil Defense: The Architect's Part* opens with the avowal that design professionals will be "called upon" to serve their country, "as in past emergencies" (7).

18. Minutes, National Defense Committee meeting, May 14, 1952; "Committee on National Defense"; Archives Box 348S; AIAA.

19. Minutes, annual meeting of board of directors, AIA, 1955; Board/Excomm. Minutes; AIAA.

20. Avigail Sachs, "Marketing through Research: William Caudill and Caudill, Rowlett, Scott (CRS)," *Journal of Architecture* 13, no. 6 (2008): 737–52; and "The Postwar Legacy of Architectural Research," *Journal of Architectural Education* 62, no. 3 (2009): 53–64.

21. "Research, Architecture and Man's Environment," December 7, 1954; "Research Statement"; Archives Box 348S; AIAA.

22. "Preliminary Report for a Committee on Science and Architecture" [October 1958]; "Committee on Science and Architecture"; Archives Box 431S; AIAA.

23. Scott, *American City Planning since 1890,* 477–79.

24. For Operation Cue, see *Cue for Survival* (Washington, D.C.: FCDA/Government Printing Office, 1955).

25. "Buildings Can Be Designed to Resist A-bombs," *Architectural Record,* August 1952, 182–84. Other representative architectural articles include "A-Bomb

Resistant Buildings: Design Lessons from Hiroshima and Nagasaki," *Architectural Forum,* November 1950, 146–50; Charles S. Whitney, "Cost of Blast Proof Construction," *Architectural Record,* August 1952, 184–86; Boyd G. Anderson, "Blast Resistant Buildings: How Practical Are They?" *Architectural Record,* December 1952, 173–78; and "Fallout Shelters," *Architectural Forum,* April 1958, 130–34. An example from the urban planning literature is "Clear Thinking on Atomic-Bombing Effects," *American City,* February 1951. The FCDA also published a technical manual for architects and engineers, *Interim Guide for the Design of Buildings Exposed to Atomic Blast* (Washington, D.C.: Government Printing Office, 1952); the manual was "interim" because of rapid progress in the technology and power of weapons.

26. Boyd G. Anderson and Ellery Husted, "Schools Can Be Made Blast Resistant," *Architectural Record,* June 1955, 210. The authors did not include the costs of new infrastructure to service these outer areas.

27. "Can a House Be Blast-Resistant?" *Architectural Record,* September 1955, 236–37; notably, the titular question is answered, "not completely." These houses were in Operation Cue.

28. Corsbie, "Nuclear Effects and Civil Defense," 83. The series of test shots of which Cue and Doorstep were a part are described in Richard L. Miller, *Under the Cloud: The Decades of Nuclear Testing* (New York: Free Press, 1986).

29. John F. Larkin, "A Pilot Study of Planned Industrial Dispersion in the Baltimore Area," *AIA Bulletin,* March–April 1953, 42.

30. Morris Ketchum Jr., "Civil and Industrial Defense," *AIA Bulletin,* March–April 1953, 36. Project East River was funded by multiple government agencies and has been well described by McEnaney, *Civil Defense Begins at Home;* Farish, "Disaster and Decentralization," 135–36; Grossman, *Neither Dead nor Red,* 58–67.

31. Larkin, "A Pilot Study," 38, 42.

32. "Committee Structure of the AIA," 1958; "Structures and Services/Organizational Directory, 1951–1964."

33. Meeting, March 9–12, 1959; Board/Excomm. Minutes; AIAA.

34. Internal memos, September 21–22, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

35. Quotations from letter, Philip Will to William Pereira and Herbert Swinburne, September 25, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA. Pereira & Luckman were no strangers to the role of architecture in the Cold War, having designed the Berlin Hilton in 1955, a symbolic statement of the values of capitalism and democracy visible from the Soviet sector of the city; see Wharton, *Building the Cold War,* 80–85. Vanderbilt points out in *Survival City,* 114, that the firm also designed missile and other military bases. AIA board minutes reveal that Visher had been directed to the AIA by editors at *Architectural Forum, Life*

magazine's sister publication at Time Inc.; meeting, November 9–11, 1961; Board/Excomm. Minutes; AIAA.

36. "Nuclear Attack and Industrial Survival," S1–S16; "Design for Survival," 127–31; and "Design for Shelter in a Typical Office Building," 132–34; all in *Architectural Record,* January 1962. For dispersal of industry and continuity planning for business, see Rose, *One Nation Underground,* 132–36; Vanderbilt, *Survival City,* 144–47.

37. Memo, Elliott Carroll to AIA staff, December 14, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

38. Meeting, November 9–11, 1961; Board/Excomm. Minutes; AIAA.

39. Memo, Elliott Carroll to William Scheik, September 29, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

40. E.g., minutes, Construction Industry Advisory Committee meeting, March 26–27, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

41. Lyndon Welch, "Civil Defense Shelters"; and CRS [Caudill Rowlett Scott] and Convair, "Fallout Protection for a New School," *AIA Journal,* November 1961, 99–110. Other articles followed, e.g., Richard Park, "National Academy of Sciences Advisory Committee on Civil Defense"; Max Flatow, "Civil Defense Programs"; and Max Flatow and Robert J. Nordhaus, "Shopping Center Shelters for Fallout Protection—Feasibility and Construction Costs," all in *AIA Journal,* February 1962, 73–83.

42. Letter, President Philip Will to AIA membership, October 17, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

43. Minutes, National Defense Committee meeting, February 27, 1951; "CD-AIA-NDC"; Archives Box 557S; AIAA.

44. "The PROS and CONS of Architecture for Civil Defense," 80.

45. Isiah Ehrlich, letter, "Best Defense—Peace," *Progressive Architecture,* October 1951, 12. Other letters citing "inevitability" were published in the November and December issues of the journal.

46. John Ely Burchard, "Architecture in the Atomic Age," *Architectural Record,* December 1954, 130. See also Lewis Mumford's *In the Name of Sanity* (New York: Harcourt Brace, 1954) and "The Morals of Extermination," *Atlantic,* October 1959, 38–44.

47. Ralph Walker, *Ralph Walker Architect* (New York: Henahan House, 1957), 146–47; previous quotes from 174–75.

48. Mitchell Schwarzer, "Modern Architectural Ideology in Cold War America," in *The Education of the Architect: Historiography, Urbanism, and the Growth of Architectural Knowledge,* ed. Martha Pollak (Cambridge, Mass.: MIT Press, 1997), 95.

49. Press release and text of John Ely Burchard, "Humanity—Our Client," RG 801; Series 7; Archives Box 162; AIAA.

50. Quotations from minutes, February 10–11, 1952; "Committee, Architect and Government, Minutes 1952"; and minutes, 1955; "Committee, Architect and Government, Minutes"; both in Archives Box 323S; AIAA.

51. Jeffrey Ellis Aronin, "Report on Standard Procedure for Establishing Shelters, and Rules and Regulations concerning Their Use," January 17, 1958; "Committee on Disaster Control, Reports"; AIA Central Files, 1958–1960; AIAA.

52. "PROS and CONS of Architecture for Civil Defense," 80.

53. Letters to the editor, *Progressive Architecture,* respectively, from Hans Blumenfeld, "Obsessive Concentration," November 1951, 8; Henry Wright, "The Best Defense," December 1951, 10; and John R. Pointer, "Saved for Chaos," November 1951, 8.

54. Serge Chermayeff, *Design and the Public Good: Selected Writings 1930–1980 by Serge Chermayeff,* ed. and intro. Richard Plunz (Cambridge, Mass.: MIT, 1982), xxi, 150–52.

55. "PROS and CONS of Architecture for Civil Defense," 68–69.

56. William Maxwell Rice, "Architecture and the Nuclear Age," *Journal of the AIA,* July 1958, 60–64.

57. National Institute for Disaster Mobilization, "Industrial Leaders Call Civil Defense System a Blunder and Demand Realistic Program" (press release), November 15, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

58. In the words of one of them, this was "a loosely-affiliated, non-organized group of AIA members on the left that mobilized occasionally in reaction to different issues, such as civil defense or race in the profession"; Edward F. Knowles, interview with the author, June 20, 2006, New York. Knowles was chairman of his local chapter of the Committee for a Sane Nuclear Policy (SANE) beginning around 1959.

59. Letter, William Scheik to Henry L. Wright, June 7, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

60. Meeting, July 1962; Board/Excomm. Minutes; AIAA; also communicated in a letter, William Scheik to Simon Breines, July 18, 1962. Previous quotations from letter, Simon Breines to William Scheik, July 11, 1962; both in "Civil Defense 1958–61"; Archives Box 334S; AIAA.

61. Jan C. Rowan, "The Shelter Program," *AIA Journal,* December 1962, 68. Unfortunately, I found no evidence that suggests how or why the group's statement finally got published.

62. William H. Scheik, "The Other Side of the Coin," *AIA Journal,* December 1962, 69. Assistant Secretary of Defense for Civil Defense Steuart Pittman extended his "sincere appreciation" to Scheik for this "excellent article"; see letter, Pittman to Scheik, December 29, 1962; "Civil Defense Fallout Shelter Competitions"; Archives Box 388S; AIAA.

63. Englehardt, *The End of Victory Culture,* 16–20. See also chapter 2, this volume.

64. Letters to the editor, respectively, from Albert M. Ruttenberg, Milwaukee, Wisconsin, *AIA Journal,* April 1963, 8; Gordon L. Stice, La Cañada, California, *P/A,* July 1962, 180; and Arthur Deimel, Wilmette, Illinois, *P/A,* August 1962, 160.

65. Letters to the editor, respectively, from Leonard E. Trentin, New York, New York; and Alan Golin Gass, Denver, Colorado, *AIA Journal,* February 1963, 8.

66. Letters to the editor, respectively, from Bertram L. Bassuk, New York, New York; John G. C. Sohn, Indianapolis, Indiana, *P/A,* July 1962, 178–80; and Gottfried P. Csala, Wilkes-Barre, Pennsylvania, *P/A,* August 1962, 160.

67. Letter to the editor from Louis H. Friedheim, *P/A,* July 1962, 180.

68. Letters to the editor, respectively, from T. Loftin Johnson, Mount Kisco, New York, *P/A,* July 1962, 178; and John W. Hill, Lexington, Kentucky, *AIA Journal,* February 1963, 8–10.

69. Office of Civil Defense, *City Halls and Emergency Operating Centers* (Washington, D.C.: Government Printing Office, 1965), 104.

70. Henry Wright, "The Best Defense," 12.

71. AIA Committee on the Profession, "Second Report on the Profession," *AIA Journal,* April 1962. Architects on both sides of the civil defense issue served on the committee: President Will, who promoted architects' participation, and Hugh Stubbins, who signed the petition against participation.

72. Memo, Matt Rockwell to William Scheik, September 8, 1961; previous quotation regarding the National Academy of Sciences from letter, Eric Pawley, AIA research secretary, to Philip D. Creer, director, School of Architecture, University of Texas, May 31, 1961; both in "Civil Defense 1958–61"; Archives Box 334S; AIAA.

73. Letter, William Scheik to AIA chapter presidents, November 6, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

74. Robert Berne, "Civil Defense Official Describes Architect's Role," *Architectural Record,* March 1964, 54; emphasis added. For the ongoing production by architects of the myth and/or the necessity that they can be sole masters of the building process, as generalists overseeing the more specific, technical professions, see Boyle, "Architectural Practice in America," 337–39; and Larson, *Behind the Postmodern Facade,* 4–14.

75. For these and following quotations, see Philip Will, "The Architect Serves His Community," *AIA Journal,* May 1962, 66–69; and "Architectural Statesmanship," *AIA Journal,* February 1961, 53–55.

76. See Frank Costigliola, "'Unceasing Pressure for Penetration': Gender, Pathology, and Emotion in George Kennan's Formation of the Cold War," *Journal of American History* 83, no. 4 (March 1997): 1309–39; and Robert D. Dean, *Imperial Brotherhood: Gender and the Making of Cold War Foreign Policy* (Amherst: University of Massachusetts Press, 2001), 169–99.

77. Letter, William Scheik to board of directors and committee chairman, AIA, January 25, 1963; with attached letter, Edmund Purves to William Scheik, January 9, 1963; "Civil Defense 1958–61"; Archives Box 334S; AIAA. Scheik replaced Purves when the latter retired as executive director in 1960.

78. *Policy Statements of the AIA, 1960;* quoted in meeting, November 9–11, 1961; Board/Excomm. Minutes; AIAA.

5. PERFORMING ARCHITECTURAL EXPERTISE

1. Meeting, January 1962; Board/Excomm. Minutes; AIAA. See also Ad Hoc Committee on Federal Office Space, "Guiding Principles for Federal Architecture," reprinted in *AIA Journal,* August 1962, 48–49.

2. Lyndon B. Johnson, "'The Great Society': Remarks at the University of Michigan," in *A History of Our Time: Readings on Postwar America,* 6th ed., ed. William H. Chafe, Harvard Sitkoff, and Beth Bailey (New York: Oxford University Press, 2003), 98.

3. Andrew Shanken, "Planning Memory: Living Memorials in the United States during World War II," *Art Bulletin* 84, no. 1 (March 2002): 130–47. The 1940s debates over modernist monumentality are explored by Joan Ockman, "The War Years in America: New York, New Monumentality," in *Sert: Arquitecto en Nueva York,* ed. Xavier Costa (Barcelona: Museu d'Art Contemporani, 1997), 22–42. See also chapter 7, this volume.

4. Shanken, "Planning Memory," 139. Or, as architectural historian Joe Kerr argues about Britain, "Anticipated victory against the new social enemies became memorialized in the great building programs of the Welfare State"; see his "The Uncompleted Monument: London, War, and the Architecture of Remembrance," in *Unknown City: Contesting Architecture and Social Space,* ed. Iain Borden et al. (Cambridge, Mass.: MIT Press, 2001), 80. See also G. Kurt Piehler, *Remembering War the American Way* (Washington, D.C.: Smithsonian Institution, 1995), 159–63, who notes the failure of several 1960s plans for "what might be termed national cold war memorials" (a monument to freedom, a national military museum).

5. Walter I. Trattner, *From Poor Law to Welfare State: A History of Social Welfare in America,* 6th ed. (New York: Free Press, 1999), 324. See also Bruce S. Jansson, *The Reluctant Welfare State: A History of American Social Welfare Policies,* 2nd ed. (Pacific Grove, Calif.: Brooks/Cole, 1993), 209–28. For similar analyses of Great Society programs specifically aimed at cities and urban planning, see Hall, *Cities of Tomorrow,* 263; and Light, *From Warfare to Welfare,* 169.

6. The following is based mainly on Blanchard, *American Civil Defense;* and Vale, *The Limits of Civil Defense.* Proposals for a funded program to upgrade protection in existing and new buildings go back as far as 1950, with the newly formed Federal Civil Defense Administration's first budgetary request to Congress.

7. Deputy Secretary of Defense Roswell L. Gilpatric, news release, Department of Defense, Office of Public Affairs, December 14, 1961; in "Civil Defense 1958–61"; Archives Box 334S; AIAA. As proposed, the Incentive Program would have provided $2.50 per square foot, or $25 per shelteree, for spaces created in various types of welfare institutions. Approved standards were the same as for the National Fallout Shelter Survey: Protection Factor 100, later reduced to PF 40, and a minimum capacity of fifty persons.

8. Minutes, Construction Industry Advisory Committee Meetings, March 26–27, April 23, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

9. Letter, William Scheik to F. Edward Hebert, chair, Subcommittee Number 3, Committee on Armed Services, U.S. House of Representatives, May 28, 1963; and "Notes on Testimony," June 10, 1963; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

10. Quoted in Blanchard, *American Civil Defense,* 11.

11. Ultimately, funds were extended to include fallout shelter in a limited number of federal government buildings, subject to individual budgetary approval in the design and planning phase. As well, according to a Department of Defense directive of 1966, up to 1 percent additional cost was allowed for fallout protection in all military construction; Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1966,* 31–33.

12. James Wise, OCD director of technical operations, in minutes, Construction Industry Advisory Committee meeting, December 6, 1962; "Civil Defense, Construction Industry Advisory Committee"; Archives Box 388S; AIAA.

13. Albert Knott, *Designing Shelter in New Buildings: A Manual for Architects in the Preliminary Designing of Shielding from Fallout Gamma Radiation in Normally Functioning Spaces in New Buildings* (University Park: Pennsylvania State University, Department of Architectural Engineering, Shelter Research and Study Program, 1967), 1. This manual also was published the same year under the imprint of the OCD.

14. Minutes, Construction Industry Advisory Committee meeting, December 6, 1962; "Civil Defense, Construction Industry Advisory Committee"; Archives Box 388S; AIAA. Previous quotation from letter, Ralph Mott, chair, AIA Committee on Safety in Buildings, to Lyndon Welch, December 27, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

15. Meeting, January 1964; Board/Excomm. Minutes; AIAA. The four competing national code authorities dealt with were the Southern Building Code Congress, Building Officials Congress of America, International Congress of Building Officials, and National Board of Fire Underwriters. Each of these competing organizations published a set of building codes that it attempted to convince local officials and governments to adopt as law or policy.

16. Schedule: The American Institute of Architects, Contract No. OCD-PS-64-209, June 30, 1964; "Civil Defense, Competition #2"; Archives Box 388S; AIAA.

17. Office of Civil Defense, *Suggested Building Code Provisions for Fallout Shelters* (Washington, D.C.: Department of Defense, 1966). Ultimately, three of the four national codes adopted fallout shelter provisions during the 1960s.

18. Restated in Meeting, August 1963; Board/Excomm. Minutes; AIAA.

19. L. V. Spencer, *Structure Shielding against Fallout Radiation from Nuclear Weapons,* National Bureau of Standards Monograph 42 (Washington, D.C.: Government Printing Office, 1962), 3.

20. J. C. Gillette, program officer, Protective Structures Division, OCD, "Report: Office of Civil Defense Engineering Case Studies Program," October 23, 1962; Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP. Gillette records that the fiscal year 1962 series studied 106 schools, 39 hospitals, and 12 commercial facilities. The latter were mainly facilities that originally had been built to include fallout shelter, and for which the OCD already had some information. In fiscal year 1963, another thirty engineering case studies were conducted, again on schools and hospitals, but this time including a number of municipal buildings and factories in an attempt, as Gillette writes, to make information "available on other types of facilities common in most communities." Architects typically received two thousand dollars to prepare the alternate set of plans for fallout shelter modifications.

21. Hampshire High School, Romney, West Virginia, Engineering Case Study #8 [Cartographic Record]; Engineering Case Studies; RG 397; NACP. These large blueprints proved difficult to reproduce in the book.

22. Letter, William Stevenson Young, partner, Sargent-Webster-Crenshaw & Folley, Architects-Engineers-Planners, Syracuse, New York, to Donald A. Bettge, staff engineer, Protective Structures Division, OCD, August 8, 1963; "Engineering Case Studies—Schools"; Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP. From my informal survey of the multitude of these letters in the archives, I would estimate that, at most, 10 percent of the engineering case studies actually were built with fallout shelter.

23. N. E. Landdeck, staff director, A&E Services Division, OCD, "Project Report, Engineering Case Studies," July 28, 1964; Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

24. "Music Hall—University of Utah," January 1964; and "Fallout Shelter Modifications —Northwestern Hospital, Minneapolis, Minnesota," April 1964; both in Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

25. Landdeck, "Project Report," July 28, 1964.

26. Hirst, *Space and Power,* esp. 198–206; and Keith Mallory and Arvid Ottar, *Architecture of Aggression: A History of Military Architecture in North West Europe 1900–1945* (London: Architectural Press, 1973).

27. A detailed exposition is found in Federal Civil Defense Administration, *Interim Guide for the Design of Buildings Exposed to Atomic Blast* (Washington, D.C.: Government Printing Office, 1952). For the British approach heading into World War II, see C. W. Glover, *Civil Defence: A Practical Manual Presenting with Working Drawings the Methods Required for Adequate Protection against Aerial Attack* (London: Chapman & Hall, 1938).

28. Memo, F. J. Tamanini, chief structural engineer, Architect and Engineer Development Division, OCD, to Lester Newhouse, Protective Structures Division, OCD, January 15, 1964; "Review of Shelter Design Series C45-3, 'Community Fallout Shelter—500 Person Capacity, Underground Steel Arch Type' (Draft)"; Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP. For debates about the social and psychological aspects of sheltering underground, see Rose, *One Nation Underground,* 86–89; Vanderbilt, *Survival City,* 129–34. To further confuse the debate and dilemma of the OCD in regards to underground shelter, the U.S. Public Buildings Service continued to prioritize "below grade areas" for fallout shelter throughout the decade; see General Services Administration, *Design Administration: A GSA Handbook* (Washington, D.C.: General Services Administration, 1968), 10–14.

29. Stanford Research Institute, *CSP Management Development* (1965). PDD; POD; OCD; RG 397; NACP. Improving ventilation was one way to increase the capacity of existing fallout shelters. This could be done architecturally or by virtue of a temporary blower system invented for the purpose, powered by a stationary bicycle during the shelter stay. The OCD stocked many shelters with these ventilation kits; for images, see www.civildefensemuseum.com/shelsupp.html.

30. Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1964* (Washington, D.C.: Government Printing Office, 1965), 29.

31. Letter, James Roembke, OCD, to William Sylvester, assistant professor, SUNY–Alfred, May 7, 1964; Publications Re: The Design and Engineering of Fallout Shelters, 1962–67; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

32. At some level, the OCD must have recognized the lexical confusion. A multiple-choice test found in a 1972 training manual asks students whether "slanting" refers to, among other things, tilting "the building to one side so that radioactive particles will be easily washed off"; or "making all entrances and window openings slant." Neither of these was the correct answer. See Defense Civil Preparedness Agency, *Civil Defense, U.S.A.: A Programmed Orientation to Civil Defense/Unit 2, Nuclear Weapons Effects and Shelter* (Washington, D.C.: Government Printing Office, 1972), 64.

33. Office of Civil and Defense Mobilization, *Incorporation of Shelter into Apartments and Office Buildings* (Washington, D.C.: Government Printing Office, 1962), 2–6.

34. "End of the Glass Box?" *Time,* May 25, 1962; and Dennis Duggan, "Glass Box Will Be Superseded," *New York Times,* May 13, 1962.

35. All previous quotations from Office of Civil and Defense Mobilization, *Incorporation of Shelter into Apartments and Office Buildings,* 4-2, 1-1, and 2-4 to 2-5, respectively.

36. Office of Civil and Defense Mobilization, *Family Fallout Shelters of Wood* (Washington, D.C.: Office of Civil and Defense Mobilization, 1960), 3. A companion volume from the same year was *Clay Masonry Family Fallout Shelter.* The OCD pamphlet *Fallout Protection,* distributed widely to the public in 1961, refers readers to this series of booklets, listing on its inside back cover the full range of organizations that "have developed plans for family shelters, available on request": American Concrete Pipe Association, American Iron and Steel Institute, Asbestos Cement Products Association, Douglas Fir Plywood Association, National Concrete Masonry Association, National Lumber Manufacturers Association, Portland Cement Association, Structural Clay Products Institute.

37. Memorandum, director of technical operations to all divisions, OCD, December 11, 1963; in the folder "Aboveground Clay Brick Masonry Core Shelter (draft)." At the same time, the OCD solicited reviews of "Steel Arch Blast Resistant Community Shelter" from manufacturers of steel culverts. Both folders in Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

38. "Fallout Shelters," *Architectural Forum,* April 1958, 134.

39. Libbey-Owens-Ford advertisement, *AIA Journal,* April 1962, 60; italics in the original. The subheading "A place to hide" no doubt refers to early salvos in the civil defense debate, represented by David Bradley, *No Place to Hide* (Boston: Little, Brown, 1948), and Ralph Lapp, *Must We Hide?* (Cambridge, Mass.: Addison-Wesley, 1949).

40. Loeffler, *The Architecture of Diplomacy;* Wharton, *Building the Cold War,* 22–24, 80–83. See also "U.S. Architecture Abroad: Modern Design at Its Best Now Represents This Country in Foreign Lands," *Architectural Forum,* March 1953, 101–15. This is also a central theme of Vincent Scully, *Modern Architecture: The Architecture of Democracy* (New York: George Braziller, 1974).

41. "Curtain Wall versus the Windowless School," *Architectural Metals,* December 1962, 10.

42. Office of Civil Defense, *Incorporation of Shelter into Schools* (Washington, D.C.: Government Printing Office, 1962), 4–5.

43. David Nevin, "Nuclear-Age School," *Saturday Evening Post,* January 26, 1963, 66.

44. "Windowless Schools Called Great Leap Backwards, Passing Architectural Fad," *Architectural Metals,* February 1963, 21; previous quotations from "Curtain Wall versus the Windowless School," 12, 13. See also Henry F. Daum,

"Some Reasons for Opposing the Trend to Windowless Schools," *Architectural Metals,* February 1963, 18ff. Brown, "'*A* Is for *Atom, B* Is for *Bomb,*'" 87–89, discusses the windowless school trend.

45. Memorandum, James E. Roembke, director, Architectural and Engineering Development Division, OCD, to [William] Durkee, deputy assistant secretary to the assistant secretary of defense, March 25, 1963; Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

46. Office of Civil Defense, *New Buildings with Fallout Protection* (Washington, D.C.: Government Printing Office, 1965), 101.

47. Flatow and Nordhaus, "Shopping Center Shelters for Fallout Protection," 80, 82. This article is immediately preceded in the *Journal* by architect Flatow's uncompromising critique of the fallout shelter program as impractical and insufficient: Flatow, "Civil Defense Programs." Proposals for suburban shopping malls as civil defense centers go back at least as far as Victor Gruen's studies for the J. L. Hudson retail firm in Detroit; see "The PROS and CONS of Architecture for Civil Defense," 74.

48. Program reprinted in the final publication: Office of Civil Defense, *National Fallout Shelter Design Competition, Community Center: Awards* (Washington, D.C.: Department of Defense, 1967), 65. The jury chair, William B. Sanders, also cites the passage in the same publication, 10. Outside of the competition literature, the theme of "community" as a central aspect of the national welfare is emphasized in publications like the Office of Civil Defense/Department of Housing and Urban Development collaboration *Housing with Shelter: Dual-Purpose Residential Fallout Protection* (Washington, D.C.: Government Printing Office, 1970), prepared by McLeod, Ferrara & Ensign.

49. Both Berne and McGaughan served at one time as AIA chapter presidents, while the former had also served, appropriately enough, on the AIA Committee on Public Relations from 1955 to 1960. AIA Membership Files for Berne and McGaugan. See also Berne's brief job description under the heading "The Architect as Administrator," in *Architectural and Engineering News,* February 1967, 35; and his obituary in *AIA Journal,* September 1973, 91.

50. A. Stanley McGaughan, "The Story of the Competition," in Office of Civil Defense, *National School Fallout Shelter Design Competition Awards* (Washington, D.C.: Government Printing Office, 1963), 6. See also Office of Civil Defense, *Incorporation of Shelter into Schools,* ii. Another representative publication is National School Boards Association, *School Boards Plan for Civil Defense* (Washington, D.C.: Office of Civil Defense, 1965), a revised edition of a 1957 booklet. The civil defense partnership with schools is analyzed by Brown, "'*A* Is for *Atom, B* Is for *Bomb*'"; and Rose, *One Nation Underground,* 133–40.

51. Letter, William Caudill to Joseph Watterson, August 16, 1961; "Civil Defense 1958–61"; Archives Box 334S; AIAA. As discussed in chapter 2, the study was published in the November 1961 issue of the *AIA Journal.* See also Convair-Fort Worth and the CRS Team, "Investigating the Feasibility and Cost of Fallout Protection for a New Schoolhouse" (1961), AIA Library. Caudill, who described his firm in the *New York Times* as "a poor man's Skidmore Owings & Merrill," was a leading figure in the development of the architect as businessman and the architectural firm as a sort of private research institute. See Duggan, "Glass Box Will Be Superseded"; Saint, *The Image of the Architect,* 157; and Jonathan King and Philip Langdon, eds., *The CRS Team and the Business of Architecture* (College Station: Texas A&M Press, 2002).

52. Steuart L. Pittman, "Statement by Department of Defense," in Office of Civil Defense, *National School Fallout Shelter Design Competition Awards,* 4; cf. McGaughan, 9; "Report of the Jury," 11, 14.

53. Letter, Steuart Pittman to William Scheik, December 29, 1962; in "Civil Defense Fallout Shelter Competitions"; Archives Box 388S; AIAA.

54. Office of Civil Defense, *National School Fallout Shelter Design Competition Awards,* 10; emphasis in the original.

55. Memo, Ken Landry to William Scheik, January 10, 1963; in "Civil Defense Fallout Shelter Competitions"; Archives Box 388S; AIAA.

56. A. Stanley McGaughan, "Report of the Professional Adviser," in Office of Civil Defense, *National Fallout Shelter Design Competition, Community Center,* 7.

57. Office of Civil Defense, *Industrial Architecture: Fallout Shelters* (Washington, D.C.: Government Printing Office, [1964]), 52.

58. Ibid.

59. Office of Civil Defense, *City Halls and Emergency Operating Centers,* 7; "new office routine" from *Industrial Architecture,* 2. Similar design research events were conducted later at Pennsylvania State University and California Polytechnic–San Luis Obispo; see, respectively, *Design Modification Studies* (Washington, D.C.: Office of Civil Defense, 1968); and Office of Civil Defense, *School Design Study/Environmental Hazards* (Washington, D.C.: Government Printing Office, 1972).

60. All previous quotations from *Industrial Architecture,* 10–11, 35, 41–43.

61. Office of Civil Defense, *City Halls and Emergency Operating Centers,* 11.

62. Ibid., 3.

63. Albert W. Knott and Gifford H. Albright, "Basic Concepts of Protection," in Office of Civil Defense, *National School Fallout Shelter Design Competition,* 135.

64. "The Talk of the Town," *New Yorker,* October 14, 1967, 47–48.

65. Henry L. Kamphoefner, "Report of the Jury," in Office of Civil Defense, *National Community Fallout Shelter Design Competition Awards* (Washington, D.C.: Department of Defense, 1965), 9.

66. Although Davis in *Stages of Emergency,* 86–87, argues convincingly that civil defense ought to be understood as rehearsal rather than performance, within the context of the profession these architects were performing an aspect of their professionalism in these projects.

6. COLD WAR CONSTRUCTIONS

1. Robert L. Durham, "Statement of the American Institute of Architects," in Office of Civil Defense, *1966 Architectural Awards: Buildings with Fallout Shelter* (Washington, D.C.: Government Printing Office, 1968), 5.

2. Prototype and privately built shelters to date were listed in the AIA report (discussed earlier) by Lyndon Welch, "Nuclear Warfare" (preliminary draft, July 26, 1961); Committee on Building Codes and Disaster Studies; Archives Box 466S; AIAA. The fallout shelter in New Orleans City Hall was used for the storage of important documents for many years, until it was realized that seepage was ruining them; for this and the reference to segregation, see Garry Boulard, "Local Architects and Politicians Lament the Once-glorious New Orleans City Hall"; www.bestofneworleans.com/dispatch/2002-04-23.

3. All preceding quotations from "Project Agreement: Prototype Community Fallout Shelter," June 12, 1960; Prototype Shelter Files from Battle Creek, Michigan; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

4. Letter, F. W. Farrel, Lt. Gen. U.S.A (Retired), director, New York State Civil Defense Commission, to Benjamin C. Taylor, acting deputy assistant director, Shelter and Vulnerability Reduction, Executive Office of the President, OCDM, May 2, 1961; and *The New York State Capitol Fallout Shelter* (n.d.); Prototype Shelter Files from Battle Creek, Michigan; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

5. "New Fallout Shelter Dedicated in Lincoln," *Lincoln Star,* April 11, 1962. A photographic walkthrough of this, known as the Irvingdale shelter, is available at civildefenselincolnne.spaces.live.com.

6. David Nevin, "Nuclear-Age School," *Saturday Evening Post,* January 26, 1963. Vanderbilt, *Survival City,* 111–13, discusses this building extensively, citing Nevin. Abo Elementary School is now on the National Register of Historic Places; no longer in use as a school, the leaking structure currently is used by the school district for storage. Its collection of surplus furniture and computer monitors will be safe during a nuclear war. Thanks to Byron Miller for photos and information regarding this building, including a labeled perspectival section that informed the description of the interior.

7. "A Below Ground School and Community Shelter for 2400 Persons, Artesia, New Mexico" (ECS 90-2), August 1962; Publications Regarding Design and

Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

8. Nevin, "Nuclear-Age School," 64.

9. This and previous quotation from ibid. Windowless schools are discussed, and counted, in Kristina Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic Age American Women," *Signs: Journal of Women in Culture and Society* 24, no. 4 (Summer 1999): 937–39.

10. Letter, A. D. Dotter, acting director, Division of School Buildings and Grounds, State Education Department, to city, village, and district superintendents, supervising principals, and architects and engineers, February 1, 1963; Publication Materials Concerning Fallout Shelters, 1962–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

11. See chapter 1, this volume. Among other examples, see Sugrue, *The Origins of the Urban Crisis,* on techniques of racial containment in one city.

12. Letter, Office of School Buildings, Board of Education of the City of New York, to James E. Roembke, director, Architectural and Engineering Development Division, OCD, May 8, 1964; Publication Materials Concerning Fallout Shelters, 1962–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP. Curtis & Davis's JHS 55 was published in Office of Civil Defense, *Schools Built with Fallout Shelter* (Washington, D.C.: Government Printing Office, 1966), 22–25; JHS 201 was published in Office of Civil Defense, *New Buildings with Fallout Protection,* 20–23. Brown, "'*A* Is for *Atom, B* Is for *Bomb,*'" 89, describes JHS 55 as "a monument to civil defense concerns."

13. "Frank Moscow Standhardt"; Membership Files, RG 803; AIAA.

14. "Buckeye City National Bank Building: Information Sheet" (n.d.); Publication Materials Concerning Fallout Shelters, 1962–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

15. *New Buildings with Fallout Protection,* 98. In addition to the *National School Fallout Shelter Design Competition Awards* (1963), OCD booklets devoted to protective design in educational institutions included *School Shelter Guide for School Administrators, Professional Educators, and School Board Members* (1963); *Schools Built with Fallout Shelter* (1966); *Fallout Protected Schools* (1967); and *School Design Study/Environmental Hazards* (1972).

16. Office of Civil Defense, *Fallout Shelter in Industrial and Commercial Buildings* (Washington, D.C.: Government Printing Office, 1967), 14.

17. "New Procedure to Be Tested Encouraging Fallout Protection in Buildings at Design Stage," Office of Civil Defense, *Information Bulletin* 180 (May 18, 1967).

18. Office of Civil Defense, *1968 Annual Report* (Washington, D.C.: Government Printing Office, 1969), 42.

19. See the files under "Professional Development Services"; Office of Emergency Preparedness, Box 4; University Archives, University of Minnesota. For a

description of the Professional Advisory Service see OCD pamphlet, *Shelter Development: Architect and Engineer Activities* (Washington, D.C.: Government Printing Office, 1965). Civil Defense University Extension Programs coordinated regional offerings of courses in fallout shelter analysis, shelter management, community shelter planning, family survival, disaster recovery, emergency first aid, etc.

20. Office of Civil Defense, *Fallout Shelters* (Washington, D.C.: Government Printing Office, 1966), 8; formatted for inclusion in *Sweet's Construction Catalog.* Dulles Terminal is also prominently featured in the 1969 OCD film *A Day in September,* which depicts civil defense preparations at different federal facilities.

21. All quotations from Office of Civil Defense, *1969 Architectural Awards* (Washington, D.C.: Government Printing Office, 1970), 42–44.

22. All quotations from Office of Civil Defense, *1966 Architectural Awards: Buildings with Fallout Shelter* (Washington, D.C.: Government Printing Office, 1968), 16–18. For Caudill's qualms see chapter 5, this volume.

23. Office of Civil Defense, *1969 Architectural Awards,* 5.

24. Ibid.

25. Minutes, Construction Industry Advisory Committee meeting, July 17, 1964; "Civil Defense, Comp. #2"; Archives Box 388S; AIAA. Department of Defense buildings were required to be slanted for fallout protection under the 1966 Military Construction Authorization Act, and an additional 1 percent on top of the construction budget was allowed for this; see Department of Defense, *Annual Report of the Office of Civil Defense for Fiscal Year 1966,* 33.

26. Letter, Arthur W. Peabody, director, Professional Advisory Service, to Roy Aune, acting director, State of Minnesota Civil Defense, September 22, 1970; "Professional Advisory Service"; Box 4; Office of Emergency Preparedness; University Archives; University of Minnesota; emphasis in the original. In addition to the General Services Administration, which was in charge of government buildings, Peabody refers to the federal departments of Housing and Urban Development and Health, Education and Welfare, both of which extended federal funds to nonfederal bodies for building construction, in addition to developing their own physical plant.

27. Vanderbilt, *Survival City,* 139; for descriptions of the sites listed, see 135–55.

28. All quotations this paragraph from Office of Civil Defense, *Emergency Operating Centers* (Washington, D.C.: Government Printing Office, 1964), 4-18, 5-2, 11-8, and G-1.

29. DOD, *Annual Report of the OCD, 1966,* 36.

30. Quotations from M. Wayne Stoffle, "New Orleans Control Center, Office of Civil Defense" [ca. 1958]; Specifications for Emergency Operating Centers, 1955–62; PSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP. For a biography, see

"M. Wayne Stoffle, Architect, Rear Admiral, Dies at Age 83," *New Orleans Times-Picayune,* January 12, 1996. Philip Johnson's Glass House and "art bunker" of 1949 express a similar purity of contrasting architectural and landscape forms. The Cold War context of the Glass House and bunker are discussed in Macy and Bonnemaison, *Architecture and Nature,* 267–70.

31. For a photo-essay on the Grand Prairie EOC, and others, see www.civildefensemuseum.com/cdmuseum2/gpeoc/index.html.

32. For the Oakland EOC, see 4-C-57/58, RG 397; Still Pictures Branch; NACP. For the list of musicals performed at the amphitheater, see www.woodminster.com.

33. See images and notes on the Denton EOC at 4-C-120; RG 397; Still Pictures Branch; NACP.

34. Details of the New York State EOC are in "Project Description, Outline Specification, and Budgetary Cost Estimate, Alternate Seat of Government, Campus Site, Albany, New York," October 1960; Specifications for Emergency Operating Centers, 1955–62; PSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP. Paint colors described in New York State Civil Defense *Newsletter,* October 26, 1963; in Records Relating to Emergency Operating Centers, 1962–64; EOCB; EOD; Plans and Ops Dir.; RG 397; NACP.

35. Office of Civil Defense, *Emergency Operating Centers,* 3-8. For the previous quotations in this paragraph, see the pamphlet described in the subsequent footnote.

36. New York State Civil Defense Commission, *Emergency Operating Center and Alternate Seat of Government* (Albany: The Commission, 1963); in Records Relating to Emergency Operating Centers, 1962–64; EOCB; EOD; POD; RG 397; NACP.

37. Specifications for Emergency Operating Centers, 1955–62; PSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

38. Office of Civil Defense, *City Halls and Emergency Operating Centers,* 11.

39. The classic summary of this urban unrest is that of the Kerner Commission, published in paperback at the time as *Report of the National Advisory Commission on Civil Disorders* (New York: Bantam, 1968).

40. Office of Civil Defense, *The Mayor's Command Center, Washington, D.C.* (Washington, D.C.: Government Printing Office, 1971); quotations from 4–7, 16.

41. Ibid., 15.

42. Office of Civil Defense, *Selected Excerpts on Civil Defense from Published Congressional Documents, 1968* (Washington, D.C.: Government Printing Office, 1969), 29.

43. Ibid., 30.

44. National Institute for Disaster Mobilization, "Industrial Leaders Call Civil Defense System a Blunder and Demand Realistic Program," press release,

November 15, 1962; "Civil Defense 1958–61"; Archives Box 334S; AIAA. A public and congressional controversy over the "special protection" offered by EOCs erupted in the 1980s; Vale, *The Limits of Civil Defense,* 81, concluded from this controversy that the two primary civil defense goals, "government survivability and public information—may well be politically incompatible in an open democracy."

45. Meeting between OCD and Praeger-Kavanagh-Waterbury Engineer-Architect (contractors for researching and writing the OCD manual *Emergency Operating Centers*), see "Conference Notes," June 3, 1962; Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

46. The Architects' Resistance, "Statement" and "Press Release"; reprinted in "Documents," *Perspecta* 29 (1998): vi–vii; printed in *Perspecta* courtesy of Thomas Carey.

47. Meeting, May 1969; Board/Excomm. Minutes; AIAA.

48. Preconvention meeting, June 1969; Board/Excomm. Minutes; AIAA.

49. "Background of AIA's Involvement with OCD" [submitted by AIA staff]; Appendix to Meeting, August 1969; Board/Excomm. Minutes; AIAA.

50. Postconvention meeting, June 1969; Board/Excomm. Minutes; AIAA.

51. All quotations from "Report of Topical Conference Meeting, Relationship AIA and OCD" (Minneapolis, December 11–12, 1969); in "Professional Advisory Service"; Box 4; Office of Emergency Preparedness; University Archives; University of Minnesota.

52. Letter, James M. Fenelon, assistant to the executive director, AIA, to A. Bailey Ryan [chairman of the AIA Public Relations Committee] and William Scheik [executive director, AIA], July 31, 1969; Appendix to Meeting, August 1969; Board/Excomm. Minutes; AIAA.

53. "Report of Topical Conference Meeting, Relationship AIA and OCD" (Minneapolis, December 11–12, 1969).

54. "Background of AIA's Involvement with OCD."

55. Letter, Fenelon to Ryan and Scheik; see note 52 this chapter.

7. BUNKER ARCHITECTURE FOR THE COLD WAR

1. Ellen Perry Berkeley, "More Than You May Want to Know about Boston City Hall," *Architecture Plus,* February 1973, 72.

2. Gerhard Kallmann quoted in Eric Larrabee, "Boston Chooses the Future," *Horizon,* January 1963, 14.

3. Curtis, *Modern Architecture since 1900,* 308.

4. Gwendolyn Wright, *USA* (London: Reaktion, 2008), 226.

5. Hirst, *Space and Power,* 166.

6. An authoritative and detailed summary is Charles G. Hilgenhurst, "Evolution of Boston's Government Center," *Architectural Design,* January 1971, 11–21.

7. Government Center Commission, *1959 Annual Report* (Boston: The Commission, 1960). Schedule, statistics, and other information regarding the competition are in Government Center Commission, *1962 Annual Report* (Boston: The Commission, 1963).

8. Sibyl Moholy-Nagy, "Boston's City Hall: It Binds the Past to the Future," *Architectural Forum,* January–February 1969, 45.

9. Donlyn Lyndon, *The City Observed, Boston: A Guide to the Architecture of the Hub* (New York: Vintage, 1982), 36.

10. "What It Took to Bring About the Best Public Building of Our Time," *Interiors,* April 1969, 130.

11. Ibid., 119.

12. Becker & Becker Assocs., "Government Center Commission, Space Requirements Report, Proposed City Hall, City of Boston," August 24, 1959.

13. In addition to the extensive literature review, I have conducted several informal interviews with City Hall employees, November 2004 and October 2007. I also received an extensive "behind the scenes" tour, October 2007, from the building manager, John Sinagra, who noted that "looking at a concrete wall all day . . . [is] depressing." More to the point, he described the difficulties inherent to renovation and repair of the rigid concrete structure.

14. Berkeley, "More Than You May Want to Know about Boston City Hall," 77.

15. Hilgenhurst, "Evolution of Boston's Government Center," 16.

16. See Berkeley, "More Than You May Want to Know about Boston City Hall," 73; Jane Holtz Kay, "Saving a Modern Monument," *Progressive Architecture,* April 1988, 30. The complaints and confusions of those who worked in the brand-new building were the direct impetus for the publication of the *Boston City Hall Employee Guide* (1968), held in Vertical File, Boston Redevelopment Authority. This document addresses the complex interiors, confusing access to the building, differing elevators, and so on.

17. Walter McQuade, "Toughness-Before-Gentility Wins in Boston," *Architectural Forum,* August 1962, 96. Early reviews are put in the context of contemporary criticism in Mitchell Schwarzer, "History and Theory in Architectural Periodicals: Assembling Oppositions," *Journal of the Society of Architectural Historians* 58, no. 3 (September 1999): 342–47.

18. Moholy-Nagy, "Boston's City Hall," 47; earlier quotation, 44.

19. "It's the Talk of the Town, New City Hall Design, That Is," *Boston Herald,* May 5, 1962.

20. McQuade, "Toughness-Before-Gentility," 97; the *Forum* answered in the affirmative.

21. The mayor's reaction described in H. D. Hodgkinson, "Miracle in Boston," *Proceedings of the Massachusetts Historical Society* 84 (1972): 78.

22. "Lenin's Tomb" found in Blake Ehrlich, "Man about Boston: Bouquets and Brickbats for that New City Hall," *Boston Traveler,* May 4, 1962. The cry of "too modernistic" is summarized in Thomas H. O'Connor, *Building a New Boston: Politics and Urban Renewal 1950–1970* (Boston: Northeastern University Press, 1993), 185–88.

23. Examples of the "Oriental" appraisal included in Martin F. Nolan, "City Hall Debate Has Been Raging 300 Years," *Boston Globe,* May 6, 1962. William Stanley Parker, "2 Noted Architects . . . 2 Views," *Boston Globe,* May 6, 1962; and several interviews in "Contest Controversy," *Boston Herald,* May 5, 1962, in which a subheading proclaims "Too Oriental." The comparison to the "tomb of Cheops" is from "Bold Bastion," *Time,* December 29, 1967, 30.

24. Nolan, "City Hall Debate." Anderson here echoes the prominent architecture writer Sigfried Giedion, who made a similar claim in comparing monumental architecture in Germany, Russia, and the United States before World War II; see note 33 this chapter.

25. The question of Boston City Hall's "identity" partook of an ongoing debate in American popular and architectural culture over the "International Style" and its appropriateness to government buildings, such as the U.S. Air Force Academy or U.S. embassies abroad. See Loeffler, *The Architecture of Diplomacy,* 108–9; and Robert Bruegmann, "Military Culture, Architectural Culture, Popular Culture," in *Modernism at Mid-Century: The Architecture of the United States Air Force Academy,* ed. Robert Bruegmann (Chicago: University of Chicago Press, 1994), 92.

26. *Time,* February 21, 1969, 60; *Newsweek,* February 24, 1969, 36; and David Ellis, "With Grace and a Touch of Boldness, City Hall," *Boston Globe,* souvenir edition, New Boston City Hall, February 9, 1969.

27. The AIA Committee on National Defense debated an Under Common bomb shelter proposal by Boston's mayor as early as 1950; see Minutes (draft), National Defense Committee Meeting, December 14, 1950; "CD-AIA-NDC"; Archives Box 557S; AIAA. The idea resurfaced during the Under Common garage's second phase of construction, which coincided with the heightened Cold War anxieties of 1961. At this time, the OCDM offered funds out of its prototype shelter program, but they fell far short of the amount needed, and the garage did not incorporate fallout shelter. See George Moneyhun, "New Boston Garage as Air Raid Shelter?" *Christian Science Monitor,* October 7, 1961. The "old timer" is quoted in Ellis, "With Grace and a Touch of Boldness, City Hall."

28. Robert Campbell, "Epilogue," in *The Architecture of Kallmann McKinnell & Wood,* ed. David Dillon (New York: Edizioni Press, 2004), 149.

29. Walter Muir Whitehill and Lawrence W. Kennedy, *Boston: A Topographical History,* 3rd ed. (Cambridge, Mass.: Belknap Press, 2000), 242. Confirmed by

the interviews in Berkeley, "More Than You May Want to Know about Boston City Hall." The criticisms have continued, with Boston's mayor recently lobbying for its abandonment and sale by the city; see Matt Viser and Donovan Slack, "Mayor Says He'll Build Waterfront City Hall," *Boston Globe,* December 13, 2006.

30. For instance, most of the essays in Goldhagen and Legault, *Anxious Modernisms,* are exemplary of this tendency. For a critique of many of architectural history's approaches to form, see Dell Upton, "Architectural History or Landscape History?" *Journal of Architectural Education* 44, no. 4 (August 1991): 195–99.

31. G. M. Kallmann, "The 'Action' Architecture of a New Generation," *Architectural Forum,* October 1959, 136. Along with Kahn, Kallmann also cites Paul Rudolph, Minoru Yamasaki, and Philip Johnson as proponents of "compositional rigorism."

32. Moholy-Nagy, "Boston's City Hall," 45, gave Boston City Hall a fine pedigree as "a frank homage to the constructivist heritage from Rietveldt *[sic]* to Le Corbusier and Kahn." Cf. Mildred F. Schmertz, "The New Boston City Hall," *Architectural Record,* February 1969, 144, for her citation of Kallmann's stylistic positioning; and Ada Louise Huxtable, "Boston's New City Hall: A Public Building of Quality," *New York Times,* February 8, 1969, 33.

33. Sigfried Giedion, "The Need for a New Monumentality," and Louis I. Kahn, "Monumentality," both in *New Architecture and City Planning,* ed. Paul Zucker (New York: Philosophical Library, 1944), 549–68 and 577–88; Joan Ockman introduces the monumentality theme in *Architecture Culture, 1943–1968: A Documentary Anthology* (New York: Rizzoli, 1993), 27–28. There is a good discussion of Kahn's theories of monumentality in Sarah Williams Goldhagen, *Louis Kahn's Situated Modernism* (New Haven, Conn.: Yale University Press, 2001), 24–40.

34. Reyner Banham, *The New Brutalism: Ethic or Aesthetic?* (New York: Architectural Press, 1966), 16, 21–27, 45–47.

35. Mallory and Ottar, *Architecture of Aggression,* 281.

36. Paul Virilio, *Bunker Archeology: Texts and Photos* (New York: Princeton Architectural Press, 1994), 12.

37. Ibid., 38–39.

38. John Ely Burchard and Albert Bush-Brown, *The Architecture of America: A Social and Cultural History* (Boston: Little, Brown, 1961), 402–5.

39. Bruno Zevi, *Architecture as Space: How to Look at Architecture,* trans. Milton Gendel (1957; New York: Horizon, 1974), 216, 242–43.

40. Richard Sennett, *The Fall of Public Man* (New York: Vintage, 1978), 12–16.

41. Vincent Scully, *American Architecture and Urbanism* (New York: Holt, Rinehart and Winston, 1969), 200, 204. A contemporaneous example is Stephen A. Kurtz, *Wasteland: Building the American Dream* (New York: Praeger, 1967). In contrasting two streams here—modern architectural historiography and social

criticism of architecture—I simplify the relationship between them. Modern movement teleology still provided the framework for social histories. In turn, the formalist historians were forced to admit social factors beyond just a generalized zeitgeist: for example, many writers on Boston City Hall feel obliged to note the building's negative reception by the public, or its arguable failure to become the welcoming space envisioned by the designers, before praising its formal characteristics and genealogy, which the public merely fails to appreciate; this is even the conclusion of Berkeley in "More Than You May Want to Know about Boston City Hall," who gives much more voice to the public than is typical in architecture criticism.

42. Nikolaus Pevsner, *A History of Building Types* (Princeton, N.J.: Princeton University Press, 1976), 62, 293.

43. The State Service Center encompassed space for departments of Health, Mental Health, Education, Employment, and Welfare. See "A Great Plaza for Boston's Government Center," *Architectural Record,* March 1964, 192 ff.

44. Lois Craig et al., *The Federal Presence,* quotations from 516, 524, 526, 538.

45. "Massachusetts Civil Defense Exercise Held Last Night," *Christian Science Monitor,* August 15, 1951.

46. "Establishment of a Workable Disaster Relief Program," *Boston City Record,* February 18, 1961.

47. Government Center Commission, *1961 Annual Report* (Boston: The Commission, 1962).

48. For instance, *Life* magazine covered the detonation in both its October 27, 1961, and November 10, 1961, issues. See also Walter LaFeber, *America, Russia, and the Cold War, 1945–1966* (New York: Wiley, 1967), 224–25.

49. See Lyndon Welch, "Civil Defense Shelters"; and CRS [Caudill Rowlett Scott] and Convair, "Fallout Protection for a New School." Other articles from the period of the Boston City Hall competition include Richard Park, "National Academy of Sciences Advisory Committee on Civil Defense"; Max Flatow, "Civil Defense Programs"; and Flatow and Nordhaus, "Shopping Center Shelters for Fallout Protection"; as well as "Nuclear Attack and Industrial Survival" and "Design for Survival," *Architectural Record,* January 1962, special insert and 127–34.

50. As, for instance, in the widely published theories of engineer Fred Severud and journalist Anthony Merrill in *The Bomb, Survival and You.* See Figure 4.6, this volume.

51. Final jury report, May 3, 1962, "Boston City Hall Competition Documents"; Boston Architectural Center Library. Preliminary jury reports and other related materials are also held in this collection.

52. Timothy Rohan, "The Dangers of Eclecticism: Paul Rudolph's Jewett Arts Center at Wellesley," in Goldhagen and Legault, *Anxious Modernisms,* 191–213.

For an analysis of the "ideology of masculinity" that characterized the Kennedy presidency, see Dean, *Imperial Brotherhood,* 169–99.

53. Wolf Von Eckardt, "Boston's New City Hall: It Has Vigor," reprinted in *Boston Sunday Globe,* April 2, 1967. The same quotation is included in "Bold Bastion," 30. The story is repeated in Paul Heyer, *Architects on Architecture: New Directions in America* (New York: Van Nostrand Reinhold, 1993), where Kallmann is more equivocal about the expression of political vigor: "Maybe this was influenced by the Kennedy Administration at the time, when there was more optimism about the usefulness of government. In retrospect we may not have thought of this consciously, but it seems to have half come through" (216).

54. Kallmann, "The 'Action' Architecture of a New Generation," 135. Cf. G. M. Kallmann, "Vital Impulses," *Journal of Architectural Education* 14, no. 2 (Autumn 1959): 38–41.

55. Serge Guilbaut, *How New York Stole the Idea of Modern Art: Abstract Expressionism, Freedom, and the Cold War,* trans. Arthur Goldhammer (Chicago: University of Chicago Press, 1983), 166–76, 198; see also Erika Doss, "The Art of Cultural Politics: From Regionalism to Abstract Expressionism," in *Recasting America: Culture and Politics in the Age of Cold War,* ed. Lary May (Chicago: University of Chicago Press, 1989), 195–220.

56. For a useful explanation of existentialist ideas in American architectural discourse of the period see Goldhagen, *Louis Kahn's Situated Modernism,* 60–63.

57. Guilbaut, *How New York Stole the Idea of Modern Art,* 11–12.

58. Robert Berne, chief architect, Architectural and Engineering Services Division, OCD, to Edward F. Knowles, December 20, 1963; "Civil Defense 1958–61"; Archives Box 334S; AIAA.

59. Edward F. Knowles, interview with the author, June 20, 2006, New York. Knowles recalls that his letter to the AIA protesting its involvement in civil defense was likely one of many individual letters sent as part of a letter-writing campaign by a "loosely affiliated, nonorganized group of AIA members on the left," who also initiated the national petition discussed earlier. As for the plaza around the building, Knowles had designed a usable public space with trees and seating that his partners rejected. He reasoned that a huge open plaza was unnecessary and inappropriate to the context, since "you're not going to have Hitler or the pope on the balcony."

60. Kallmann, "The 'Action' Architecture of a New Generation," 244.

61. Huxtable, "Boston's New City Hall," 33.

62. Peter Collins, "Critique," *Progressive Architecture,* April 1963, 146.

63. Government Center Commission, *A Competition to Select an Architect for the New City Hall in the Government Center of the City of Boston* (Boston: The Commission, 1961); and Becker & Becker Assocs., "Government Center Commission, Space Requirements Report, Proposed City Hall, City of Boston," 23,

44. Presciently, the Department of Civil Defense was provided twice the potential for future expansion, in comparison to other city departments.

64. Department of Civil Defense, "Annual Report" (City Document No. 9), *Boston City Documents* (1962), 2–5.

65. "What It Took to Bring About the Best Public Building of Our Time," 122–23.

66. The fallout shelter supplies are stored in two locations, one of which is under the trapdoor currently beneath the security desk on the first floor by the east entrance; personal communication, Dave Nathan, Boston City Archives, confirmed during my tour with building manager John Sinagra, who also confirmed that the building once was posted with federal fallout shelter signage.

67. For a historical analysis of this image, seemingly depicting a well-dressed African American man, Ted Landsmark, being speared with a flag pole on the steps of Boston City Hall, see Louis P. Masur, *The Soiling of Old Glory: The Story of a Photograph That Shocked America* (London: Bloomsbury, 2008).

68. Nelson Aldrich, "Boston's New City Hall Will Hold Focus of Entire Government Center Project, Architects Point Out," *Boston City Record,* December 25, 1965, 921. A somewhat smaller version of the EOC appears on plans published in "The New Boston City Hall," *Progressive Architecture,* April 1963, 144.

69. For a contemporary summary, see Reyner Banham, *The Architecture of the Well-Tempered Environment* (London: Architectural Press, 1969), 171–94.

70. *Boston City Hall Employee Guide,* 10, 13; emphasis in the original.

71. Berkeley, "More Than You May Want to Know about Boston City Hall," 73. Today, the dispersed "guides or security personnel" have been replaced by security checkpoints at entrances. Employees complained about the locked stairwells as early as the building's opening; see Ellis, "With Grace and a Touch of Boldness, City Hall."

72. Boston Redevelopment Authority, press release, April 2, 1963, held in Vertical File, Boston Redevelopment Authority; and Final Jury Report, Boston City Hall Competition, May 3, 1962.

73. Anthony E. Forgione, assistant commissioner for real property, city of Boston, quoted in Berkeley, "More Than You May Want to Know about Boston City Hall," 74.

74. "Bold Bastion," 30.

75. "What It Took to Bring About the Best Public Building of Our Time," 126.

76. Letter, Henry A. Wood, project manager, Architects and Engineers for the Boston City Hall, to John Lovering, August 1, 1966; and memorandum (with plan), Laurie J. Cormier, regional director, OCD Region One, to assistant director of Civil Defense (Technical Services), August 9, 1966; both in "Publications Regarding Design and Engineering of Fallout Shelters, 1960–1967"; TSB; A & E Serv. Div.; TSD; OCD; RG 397; NACP.

77. OCD, *City Hall/Boston, Massachusetts: Buildings with Fallout Protection, Design Case Study* (Washington, D.C.: Government Printing Office, 1972). Other buildings published as Design Case Studies between 1970 and 1974 include the Louisville, Kentucky, Public Library, the New Jersey State Police Emergency Operating Center in West Trenton, and, in Iowa, the Clinton Law Enforcement Center and Men's Residence Halls at the University of Dubuque.

78. For contemporary security design, see the multifarious solutions in Barbara Nadel, ed., *Building Security: Handbook for Architectural Planning and Design* (New York: McGraw-Hill, 2004).

79. Berkeley, "More Than You May Want to Know about Boston City Hall," 77.

80. Jack Thomas, "I Wanted Something That Would Last," *Boston Globe,* October 13, 2004. The bulk of this article is an interview with architect Kallmann reflecting on the intentions and history of Boston City Hall. In it, he makes the small admission that the architects looked to "ramparts" as one of their precedents.

EPILOGUE

1. All quotations from "Coming Home: The Urban Environment after Nuclear War" (1984), in Tridib Banerjee and Michael Southworth, eds., *City Sense and City Design: Writings and Projects of Kevin Lynch* (Cambridge, Mass.: MIT Press, 1990), 828–31. Lynch first developed his research on legibility and sense of place in *The Image of the City* (Cambridge, Mass.: MIT Press, 1960).

2. See Helen Caldicott, *Nuclear Madness: What You Can Do* (New York: Bantam, 1979); Jonathan Schell, *The Fate of the Earth* (New York: Knopf, 1982); and the special issue of *Diacritics* 14 (Summer 1984), on "nuclear criticism," with essays by Derrida, Dean MacCannell, Derrick de Kerckhove, and others. For a thorough analysis of the TV movie, see Susan Boyd-Bowman, "*The Day After:* Representations of the Nuclear Holocaust," *Screen* 6, no. 4 (1984): 18–27.

3. *Quonset Huts on the River Styx: The Bomb Shelter Design Book* (Berkeley: North Atlantic Books, 1987), 2, 5. Previous quotations from the competition brief "Give Them Shelter/It's Not for Everyone," held in the library, Canadian Centre for Architecture, Montreal. The inhabitable cockroach is perhaps reminiscent of the 1960s avant-garde design group Archigram's "Walking City," itself envisioned for a postapocalyptic landscape. The connection was not lost on architecture critic Allan Temko, who wrote the introduction to the book and served on the jury for the competition. Other jurors were noted architect Mark Mack and the California artists Robert Arneson and Barbara Stauffacher Solomon.

4. The *Barney Miller* episode, which sends up shelter self-help, urban evacuation, civil defense budget cuts, and the inequities of government bunkers, is

preserved in the FEMA collection at the National Archives: "Barney Miller: Evacuation Episode" ([ABC TV], 1976); 311.279; Motion Pictures Branch, NACP.

5. Defense Civil Preparedness Agency, *Guidance for Development of an Emergency Fallout Shelter Stocking Plan* (Washington, D.C.: Department of Defense, 1978), 1. See also Judy Grant, "Reminders of Fears of Fallout Shelters Far into Mid-70s," *Minnesota Daily,* July 30, 1975; and Charmayne Marsh, "CD Ordered to Destroy Cracker Ration," *Dallas Morning News,* October 29, 1976.

6. Blanchard, *American Civil Defense 1945–1984,* 16–17.

7. Kenneth Labs, "The Architectural Underground," *Underground Space* 1 (1976): 7.

8. Defense Civil Preparedness Agency, *Building Design for Radiation Shielding and Thermal Efficiency* (Washington, D.C.: Government Printing Office, 1977), 1.

9. E.g., the following FEMA titles were all updated editions of OCD publications: *Standards for Fallout Shelters: Public Shelters and Fallout Shelters in Hospitals* (1979); *Decontamination Considerations for Architects and Engineers* (1980); *EMP Threat and Protective Measures* (1980); *Mass Thickness Manual for Walls, Floors, and Roofs* (1984); and the *Attack Environment Manual* (1987).

10. Some of the connections between Cold War civil defense and twenty-first-century programs of the Department of Homeland Security are explored by James Hay, "Designing Homes to Be the First Line of Defense," *Cultural Studies* 20, no. 4–5 (July–September 2006): 349–77.

11. *Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings* (Washington, D.C.: Federal Emergency Management Agency, 2003), 3-1 to 3-5.

12. Loeffler, *The Architecture of Diplomacy,* 241 ff.

13. *Reference Manual to Mitigate Potential Terrorist Attacks,* iii.

14. Figure E.3 compiled from Robert Berne, *A Case for Protective Design, Nuclear and Otherwise* (Washington, D.C.: Defense Civil Preparedness Agency, 1972); Defense Civil Preparedness Agency, *Building Design for Radiation Shielding and Thermal Efficiency;* Defense Civil Preparedness Agency, *Civil Defense, U.S.A.: A Programmed Orientation to Civil Defense/Unit 2, Nuclear Weapons Effects and Shelter* (Washington, D.C.: Government Printing Office, 1972); Pennsylvania State University Department of Architectural Engineering, *Cost Benefits in Shelters* (Washington, D.C.: Defense Civil Preparedness Agency, 1972); and Federal Emergency Management Agency, *Multi-Hazards and Architecture,* vol. 1B ([Washington, D.C.: Government Printing Office], 1986). Note that most of the techniques listed in Figure E.3 have multiple applications.

15. Berne, *A Case for Protective Design.*

16. All quotations from "Federal Reserve in Suspense," *Architectural Forum,* January–February 1969, 100–105. It should be noted that the Federal Reserve operates independently of the federal government.

17. Esther McCoy, "Federal Reserve Building and IBM Information System Center," *GA* 31 (1974).

18. "Federal Reserve in Suspense," 102; emphasis in original.

19. William H. Whyte, *The Social Life of Small Urban Spaces* (Washington, D.C.: Conservation Foundation, 1980), 85.

20. William H. Whyte, *City: Rediscovering the Center* (New York: Doubleday, 1988), 222.

21. Mike Davis, *City of Quartz;* quotations on 223, 232, 238, 240. For a more sympathetic review of this approach to defensive architecture, see Charles Jencks, "Hetero-Architecture for the Heteropolis: The Los Angeles School," in Ellin, *The Architecture of Fear,* 217–25.

22. Peter Marcuse, "Urban Form and Globalization after September 11th: The View from New York," *International Journal of Urban and Regional Research* 26, no. 3 (2002): 596–606. See also the essays in Sorkin, *Variations on a Theme Park;* Ellin, *The Architecture of Fear;* and Graham, *Cities, War, and Terrorism.*

23. "Fallout Shelter License or Privilege" (OCD Form 677 [May 1964]); Records Relating to OCD Annual Report, 1959–65; OCD; RG 397; NACP.

24. For the privatization of public space, see the essays in Setha Low and Neil Smith, eds., *The Politics of Public Space* (New York: Routledge, 2006); and the book-length study by Kristine F. Miller, *Designs on the Public: The Private Lives of New York's Public Spaces* (Minneapolis: University of Minnesota Press, 2007). For specific critiques of public space signage, see Whyte, *The Social Life of Small Urban Spaces,* 64–65; and Richard Bolton, "Figments of the Public: Architecture and Debt," *Threshold* 4 (Spring 1988): 44–49.

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INDEX

Abo Elementary School, Artesia, New Mexico, 192–94, 196
Abrams, Charles, 11
abstract citizen, 2, 29–30, 33–34
African Americans, 6, 91, 136, 196
AIA Journal, 10, 122–23, 131–32, 134, 140, 149, 249
air conditioning. *See* environmental control
Alexander, Robert E., of Neutra & Alexander, 43
Allen, Rex W., 226
American Institute of Architects (AIA), xvi, 7, 130, 272; *Civil Defense: The Architect's Part,* 43, 110, 112; as consultant to federal agencies, 11, 44, 107–8, 112, 134, 137, 228; fellowship in, 197; Honor Awards program, 204, 232; lobbying, 44, 107–8, 111, 120, 138, 141, 149; policies/policy statements, 113, 114, 132, 140–41, 152–53, 228; promoting urban dispersal, 10, 128; and promotion of research, 45, 95, 108, 114, 138, 141; public relations, 108, 111, 140–41; staff, 108, 110, 114, 140–41, 228; *Standards of Professional Practice,* 110
American Institute of Architects (AIA), relationship with Office of Civil Defense (OCD), 37–38, 133, 140; as arbiter of "good design," 143, 145, 150, 168, 204, 227; for conducting awards programs, 189; for conducting competitions, 170; as consultant or contractor, 120, 132, 142, 228; critics of, 109, 190, 225–26, 253; for researching building codes, 151–52
American Institute of Architects AIA) committees, 114–15; ad hoc on civil defense during World War II, 111; Committee on Atomic Age Architecture, 111; Committee on Building Codes and Disaster Studies, 120, 123, 150; Committee on Disaster Control, 120; Committee on Hurricane Resistance, 129; Committee on National Defense, 111, 112, 113, 115, 119, 123, 288n11; Committee on Nuclear Facilities, 111, 114–15; Committee on Research, 114, 120, 121; Committee on Safety in Buildings, 44, 120, 151; Committee on Science in Architecture, 114; Committee on the Architect and Government, 128; Committee on the Profession, 137
American Institute of Planners, 114, 122
American Legion, 61
American Medical Association, 128

American Society of Civil Engineers (ASCE), 121–22
Anderson, Lawrence B., 234–35, 241
architects, 44, 80, 108, 144; as artistic individuals, 108, 112, 127–28, 141, 153, 184; benefits from civil defense work, 51–53, 123; and "comprehensive services," 137, 141; debating civil defense, 109–10, 123–37, 170, 190, 225–29, 249, 253, 277; as defense intellectuals, 107, 114–15, 130, 133, 137, 141, 186, 188; as experts, 45, 51–53, 107, 138, 228; and fallout shelter awards programs, 202, 204–5, 209; as leaders, 43, 107, 111–12, 123–24, 127, 129, 137–40; and national security, 124, 134, 137, 141, 188; and professional objectivity, 132–34, 252–54; professional responsibilities of, 108–10, 112, 127, 129, 131, 133, 135, 139; roles in civil defense, 46, 83, 107, 110, 115, 118–19, 124, 139; roles in fallout shelter program, 37–38, 51, 73, 120, 180; and technical knowledge, 44–45, 115, 138; training as fallout shelter analysts, 48–50, 122–23; in World War II, 110–13, 170, 215, 291n4
Architects, Designers, and Planners for Social Responsibility, 272–73
Architect's Resistance, The (TAR), 225–26, 274
Architectural Forum, 45–46
Architectural Graphic Standards, 32
Architectural Record, 121
Architecture and the Atom (film), 226–28
architecture journals, 30, 45–46, 115, 131
architecture profession. *See* profession, architecture
Army Corps of Engineers. *See* Corps of Engineers, U.S. Army
Artesia, New Mexico. *See* Abo Elementary School, Artesia, New Mexico
Association of Collegiate Schools of Architecture, 227
atomic bomb, 1, 115; effects, 7, 111, 117. *See also* nuclear weapons: effects
Atomic Energy Commission (AEC), 5, 28, 111, 112, 114–15

"baffled" entrances, 154, 157, 172, 278
Baltimore, Maryland, 119
Banham, Reyner, 243
Bassetti, Fred, 181–83
Berkeley, California, 246
Berlin, Germany, 38, 166
Berne, Robert, 139, 170–71, 226, 253, 277, 279
"biopower" concept, xv, 65, 73, 93
Birkerts, Gunnar, xviii, 184–85, 277, 279–80
Blackwell, Oklahoma: fallout shelter, 208–9
blast protection, 116–17, 120, 124, 157, 159, 221; differentiation from fallout protection, 46–47, 62, 72, 167; as standard for critics of fallout shelter, 131, 158; techniques for, 126, 212–13, 250. *See also* bomb shelters
bomb shelters, 2, 27, 113, 124, 129–30, 177; tests of, 29–32, 115. *See also* fallout shelters, home; fallout shelters, public
Bonestell, Chesley, 3

Boston, Massachusetts, 87, 240, 248–49, 271–72; Civil Defense Department, City of, 56, 255–56; fallout shelters, 59, 71, 241, 256, 266, 270; Government Center urban renewal area, 234, 246–49, 265; Redevelopment Authority, 234
Boston City Hall, xi–xii, xxi, 137, 229, 271; building security, 265–66; civil defense offices, 255–56, 258; competition, 160, 168, 231, 234–35, 244, 253–55; competition finalists, 185, 249–52; competition jury, 234, 249–50; council chambers, 235, 238, 261; critical acclaim, 232, 239–40, 254, 267; described, 232, 235–39, 245–46, 269, 270; Emergency Operating Center, 232, 259–60, 264–65, 267–69; fallout shelter, 59, 232, 255–61, 267–69; fallout shelter signage, 232; formal influences, 242; mayor's office and related spaces, 236–37, 261, 266–67; meanings associated with, 233–34, 240–41; old, 239, 241; plaza, 235, 237–38, 265, 271, 329n59; public reception of, 232–33, 239–41, 270; tripartite organization, 235, 239, 260, 265
Breuer, Marcel, 247
Broadside magazine, 65–66
Brutalism (architectural style), xviii, 242–44, 252, 279. *See also* modernism
building owners, 143, 148, 156, 161, 203; cooperation with civil defense officials, 54–56, 63, 84, 191, 198, 282
building regulations: hampering fallout shelter program, xiv, 191. *See also* fallout shelter design: and building codes
building security, 145, 269–70, 276–81. *See also* Boston City Hall: building security
bunker architecture, xx, 158, 188, 205, 229, 234, 268, 272, 277; characteristics of, 171–72, 190, 198–99, 233–34, 249–50, 256, 266; critics of, 245–48; definition of, xviii–xix, 145; examples of, xxi, 174–78, 184–86, 192–96, 207–9, 246–47, 277, 279–81, 289–90n15; meanings of, 160, 191, 196–97, 245, 248, 270, 282; threatening aspect of, 194, 241, 245–48, 269
bunkers, 161, 167, 169, 181, 185, 187, 197–98; aesthetic of, 188, 207, 250, 257, 281; military, xix, 157, 213, 244; as primary image of civil defense, 145, 158, 160; underground, 61, 152; unnecessary for fallout shelter, 144–45, 158, 256, 270
bunkers, government. *See* continuity-of-government facilities
"bunker style," xii, xviii
Burchard, John Ely, 127–28, 245

Camp Century, Greenland, 102–4
Canada, xiv, 19, 59–60
Caudill, William, 160, 171, 179, 208–9
Caudill Rowlett Scott, 114, 171, 179, 208, 289n15
Census Bureau, U.S., 50; data from, 85–86
C. F. Murphy Associates, 247
Chermayeff, Serge, 129–30
Chicago, Illinois, 226, 296n59
Chicago school of sociology, 10
Churchill, Henry S., 132
circular structures, 125, 172, 174, 250–51, 277

citizens, xvi–xviii, 2, 82, 102, 106, 254; relation to the state, xii–xv, 232–33, 269–70, 282–83; U.S. citizens, xviii–xix, 29, 35–36, 47, 88, 92. *See also* abstract citizen
city centers, 26–28, 34, 36, 101; as locations of fallout shelters, 37, 43, 87, 89; postwar reconstruction of, 8, 129; as projected targets, 2, 9–10, 12, 28, 33, 87, 98, 271
City Halls and Emergency Operating Centers (publication), 179, 183–86, 222
civil defense, 16, 39, 106; in countries other than the United States, xiv, 152, 287n3, 298n13; critics of, 2, 45–46, 109, 126, 190, 272, 274; defined, xii–xiii, xv, 232; drills and exercises, xvi, 66–67, 95, 97, 109, 192, 248, 294n39; federal agencies, 13, 273; and gender assumptions, xiv, xx, 2, 196, 294n41; legislation, 12; local agencies, 54, 62, 78, 86, 90, 223, 248; officials, xii, 12, 16, 143, 145, 203; plans and programs, xviii, 39, 68, 84, 109; publications, 30, 95, 272; public interest in, 12, 38, 96, 113, 133, 141, 273; and racial assumptions, xiv, xx, 6, 32–34, 36, 106; research, 18, 26–27, 96, 115, 119, 155, 191–92, 274; rescue training, 22–25; as a technical problem, 74. *See also* specific federal agencies (listed on p. 13); fallout shelter, debates over; fallout shelter program
"Civil Defense Sign, The" (Spoelstra), 65–66
class, social, 30, 39, 41, 97, 106, 263
Cold War, xiv–xxi, 2; histories of, 39–41, 288–89n13
Collier's magazine, 1, 3, 21
Collins, Peter, 254
Columbia University, 41, 69
communism, xiv–xv, 2, 17, 24, 46, 128, 134
community centers (building type), 146–47. *See also National Fallout Shelter Design Competition, Community Center: Awards*
Community Shelter Planning (film), 78–81
Community Shelter Plans, xx, 77, 85; dissemination of, 77, 88–90; Office of Civil Defense recommendations for, 87; planning process, 78, 81, 171, 256. *See also* "shelter drainage area"; shelter managers
competitions, architectural design, 168, 272–73. *See also* Boston City Hall; fallout shelter design: competitions
computers, 50–51, 85
concentric circles: as diagram of nuclear weapons effects, 5, 10, 116, 119, 174
Congrès Internationaux d'Architecture Moderne (CIAM), 243
Congress, U.S., 4, 12–13, 82, 147, 149–50, 190, 223; bunker for, 211–12
consensus, 16, 270; "liberal consensus" concept, 39, 134–35, 140
Construction Industry Advisory Committee, 122, 133, 149–52, 168, 210, 228
consumer culture, 29, 145, 166
"containment culture" concept, xv, 2, 34, 99, 196, 222, 274, 281, 287n4
continuity-of-government facilities, 63, 101, 179, 211–12, 219, 221. *See also* Emergency Operating Centers

Cornell University, 98–101, 104–6
Corps of Engineers, U.S. Army, 48, 53, 68–69, 83, 102, 170–71
Corsbie, Robert L., 114, 117, 131, 224
Creighton, Thomas, 124–25, 131
Cuban Missile Crisis, xx, 40, 42, 63, 135, 138, 195, 256
Curtis, William, 233
Curtis & Davis, 194–97

Davis, Janet, 66–67
Davis, Mike, 281
Davis, Tracy, xvi
Day After, The (film), 272
Defense Civil Preparedness Agency, 274
defense intellectuals, 8, 38, 39, 45, 81, 98–99, 119. *See also* architects: as defense intellectuals
Denton, Texas: fallout shelter, 52; federal Emergency Operating Center, 218–20
Department of Defense, U.S., 8, 47, 137, 274–75; budgets, 40, 80, 298n13; facilities with fallout shelter, 63, 314n11; prediction of targets or fallout distribution, 37, 46, 69–70, 153
Department of Homeland Security, U.S., 12, 275, 283
détente, 40, 42, 274
Detroit, Michigan, 6–7, 8, 9, 224; fallout shelter in, 198
Direct Mail Shelter Development System, 203
disaster studies, 1, 18, 95, 113
Disneyland, 24–25
dispersal. *See* industrial dispersal; urban dispersal
Dodge Reports, 203
Dr. Strangelove; or, How I Learned to Stop Worrying and Love the Bomb (film), 190
duality, logic of, 146, 187–88. *See also* fallout shelters, public: dual purpose
"duck and cover" drills, xiv, xvi, 66–68
Dunlap & Associates, 92–95
Durham, Robert L., 189
Durkee, William, 62, 186, 210
Dylan, Bob, 65

Eberle M. Smith Associates, 44, 160, 198
Edmonson, F. W., 100
Edwards, John, Jr., 75, 86
Ellerbe & Company, 199–201
Ellison, Ralph, 28
Emergency Operating Centers (EOCs), xx, 105, 185, 269; critics of, 190, 224; examples of, 213–21; exhibits of, 221, 267–68; federal funding for, 190, 212, 220, 264; minimum standards, 212; secrecy of, 221–22; security of, 213, 215–16, 220, 222; use during local emergencies, 222–25
energy conservation, 274–75
engineers, 44, 74, 83; architects competing with, 112, 135, 138, 151; Office of Civil Defense, 150, 168–69
Englehardt, Tom, 36
environmental control, 161, 166, 194, 265
environmental movement, 275
ethics: of design for civil defense, 2, 105–6, 124, 129, 131; of fallout shelter program, 40–42, 47; "lifeboat ethics," 11, 95; professional, 74, 109–10, 122–23, 133, 137, 225
ethnicity, 41, 104
evacuation of cities, 14, 26, 43, 101

Existenzminimum concept, 50
"expedient shelter," 89
expertise, 98, 134; architectural, xii, 31, 33, 105, 108, 123, 138, 141, 151–52; in fallout shelter design, 156, 202, 277; urban planning, 82–83
experts/expert culture, 16, 39, 54, 75, 83, 225, 263. *See also* architects: as experts; foreign policy: experts

fallout from nuclear weapons, xix, 15, 40, 46–47, 120; distribution of, 21, 47, 49, 153, 155, 256, 261. *See also* nuclear weapons: effects
fallout shelter: alterations to existing buildings, 191; confusing boundaries of, 207, 256–61; inherent in buildings, 35, 166, 189–90, 195, 203, 229, 256, 268; invisible in buildings, 188, 190, 206–7, 210, 222, 226, 256–57
fallout shelter, debates over, 39–40, 46, 74–75, 106, 131–37, 158, 164, 180; ignored by civil defense officials, 42, 45, 75. *See also* architects: debating civil defense
fallout shelter analysts, 149, 156, 195, 202, 203, 204, 279; calculations of, 71, 190, 206, 256–57, 261; statistics, 48; training and certification, 48–50, 135, 138, 225, 300n28
fallout shelter construction, xvi, 86, 122, 188, 210; funding of, 203, 210, 212, 226, 313n6; prototypes, 113, 191–94
fallout shelter design, xx–xxi, 36, 44–46, 132, 135, 160, 249; awards programs, 109, 159, 189, 204–10, 226; and building codes, 86, 122, 143, 151–53, 194–95, 314n15; charrettes, xii, xx, 109, 144, 178–86, 188, 267–68, 279; competitions, xii, xx, 109, 144, 147, 152–53, 159, 168–78, 180, 188, 268; Design Case Studies, 268–69, 331n77; engineering case studies, 155–56, 170, 171, 315n20; fundamentals, 153–56, 159, 176; interior layout, 94; promotion to the profession, 144–45, 158, 167–68, 189, 204, 210; solutions, 154–56, 161, 172–78, 182–86
fallout shelter funding, 143, 190, 203, 210; proposed legislation, xxi, 147–50. *See also* Shelter Incentive Program
fallout shelter habitability, 51, 156, 183, 187; research on, xvi, 81, 95–97, 158, 192, 263
fallout shelter program, 38, 145, 164, 224, 232, 249, 256; budget, 47, 229; critics of, 42, 47, 69–70, 132, 211; demise of, 86; promotion to the public, 59–60, 62–63, 96, 120, 143–44, 176, 226, 229; rationale for, 46–47, 158; statistics, 42, 229
fallout shelters, home, 15–16, 36, 43, 45, 74, 89; designs for, 35, 161–62; occupying of, 96; reasons not built, 41–42, 135
fallout shelters, public, 34, 38, 47, 105, 122, 269; allocation to, 77–79, 81, 83, 85, 87, 89, 305n22; capacity of, 40, 48, 50–51, 56, 85, 87, 316n29; ceremonies commemorating, 59–60, 192; descriptions of, 37, 71, 90–91, 191–202, 205–10, 256–61; dual purpose, 144, 146–47, 149, 158, 160, 187, 208, 210, 280; homogeneity of shelterees, 94, 97, 104–6; licensing with building owners, 54–55, 69, 282, 300n38; minimum standards,

50, 63, 96, 150, 205, 257; movement to, 85, 87, 98; occupying of, 77, 81, 90–95, 104, 260–64; professional support for, 45, 209, 272; public support for, 41–42, 96; purpose-built, 91, 192, 203; reasons not built, 148, 155, 203–4, 210–11. *See also* fallout shelter signs: posting of; fallout shelter supplies; National Fallout Shelter Survey
fallout shelter signs, xiii, 42, 47, 79, 89, 192, 256–57; confusing meanings of, 70–71, 207; contested meanings of, 65–72, 74; design of, 55; on federal government buildings, 64; intended meanings of, 61–62, 65, 72–73, 229; posting of, 55–56, 69, 229; vandalism of, 68
fallout shelter supplies, 36, 65, 229, 261–62; exhibits of, 59, 191; specifications, 56–59; stocking of, 54–59, 87, 211, 273; storage of, xi, 55–59, 79, 193; supplemented locally, 90, 198; ultimate uses of, 224, 273
fallout shelter surveys. *See* National Fallout Shelter Survey; shelter surveys
Fallout Shelter Surveys (book), 44
federal buildings. *See* government buildings: federal
Federal Civil Defense Administration (FCDA), 3, 18, 83, 112–13, 120, 141; budget, 13, 16, 113; founding of, 12, 110; participation in nuclear tests, 27–29; plans and programs, 13–16, 42
Federal Emergency Management Agency (FEMA), 262, 275–77
Feldman, M. Russel, 67
Foon, Jeu, 53, 74–75
foreign policy, xv, xvii, 17, 35, 99, 126, 248, 252; experts, 139, 281
Fort Belvoir, Virginia, 47
"fortress urbanism" concept, xix, 234, 269, 273, 277, 281–82, 290n19
Foucault, Michel, xv–xvi
Fountainhead, The (Rand), 128

Gehry, Frank, 281, 290n15
gender, 30, 33, 41, 100, 102–3, 263. *See also* civil defense: and gender assumptions
General Services Administration, U.S., 63, 129, 211, 228
Germany, 12
Giedion, Sigfried, 243
glass industry, 125, 164–66
"good design," xii, xvii, 143–44, 152, 197, 288n12; arising from fallout shelter programs, 176, 189, 208, 210, 226–28; for Emergency Operating Centers, 222; endorsed by American Institute of Architects, 109, 168, 204, 210; Office of Civil Defense interest in, 232, 269
government buildings, 146, 191, 210, 269; federal, 63–64, 143, 210–11, 219, 234, 247, 314n11
Grand Forks, North Dakota, 8
Grand Prairie, Texas, Emergency Operating Center, 218
Great Britain, xiv, 12, 22
"Great Society" program, xv, 81, 106, 145–47, 171; and community, 39, 145–46, 169
Gropius, Walter, 132, 253
Gruen, Victor, xviii, 132, 198, 253
"Guiding Principles for Federal Architecture," 143
Guilbaut, Serge, 252–53
Gutheim, Fritz, 123

Hackman, Gene, 78–80
Hajjar, A. William, 181–82
"hardening" of facilities, 159, 198, 212–13, 232, 276
Harper, Charles, 51–53
Health, Education and Welfare, U.S. Department of, 211, 227–28
high-rise buildings with fallout shelters, 153, 156, 160–61, 199–202, 205–7
Hill, John W., 136, 151, 179, 183, 222
Hilo, Hawaii: fallout shelter, 210
Hiroshima, Japan, 3, 8, 9, 17, 117
Hise, Greg, 50
Hoegh, Leo, 15
Hosey, Lance, 32
hospitals, 41, 155; portable emergency, 59
House in the Middle, The (film), 28
Housing and Home Finance Agency, U.S., 82–83
Housing and Urban Development, U.S. Department of, 211, 228; headquarters building, 247
Husted, Ellery, 116
Huxtable, Ada Louise, 254
hydrogen bomb, 14, 15, 88, 120. *See also* nuclear weapons: effects
hypothetical attack scenarios, 1, 3–6, 8, 20, 95, 104, 174, 248, 271; performance of, xvi, 22, 82

IBM (International Business Machines Corporation), 98, 104
Indians, American, 36–37, 133–34, 162
Industrial Architecture (publication), 179–81
industrial buildings, 181–83, 197, 205
industrial dispersal, 11, 28, 119–20, 129
International Style architecture. *See* modernism
Interstate Highway System, 64–65. *See also* National Interstate and Defense Highway Act
Invisible Man (Ellison), 28

Jacobs, Jane, 245
Japan, 12. *See also* Hiroshima, Japan
Johnson, Lyndon, xv, 39, 81, 145–46; administration, 36, 143. *See also* "Great Society" program

Kahn, Louis, 160, 174, 242–43
Kallmann, Gerhard, 235, 242, 244, 252–54, 256, 266, 268
Kallmann, McKinnell & Knowles (later, Kallmann, McKinnell & Wood), 231, 233, 241, 252, 255
Kansas City, Missouri: fallout shelter, 204
Kemper, Edward, 111
Kennan, George, 17, 34, 139
Kennedy, John F., xv, 35–36, 38–40, 47, 81, 135, 148, 198; administration, 143, 252
Knowles, Edward F., 235, 253–54
Korean War, xvii, 12, 42, 124
Krushchev, Nikita, 38

Lacy, Bill N., 179–80
Lapp, Ralph, 11
Le Corbusier, 7, 160, 212, 242–45; La Tourette Monastery, 240, 242, 244; Unité d'Habitation, 242–44
Lefebvre, Henri, xvi–xvii
"Let Me Die in My Footsteps" (Dylan), 65
Libbey-Owens-Ford, 164–67
Life magazine, 35–37, 45, 121
Light, Jennifer, 80

Lincoln, Nebraska, 62; fallout shelter, 192
"living memorials," 146–47, 243
Loehr, Rodney, 54
Los Angeles, California, 8, 11, 281; fallout shelter, 198
Luce, Henry, 45
Lynch, Kevin, 234, 271–72

MacCannell, Dean, 33
"Main Street" as symbol, 21, 24–27, 102–3
Markusen, Ann, 11
martial law, 92, 94–95
masculinity, 250, 252. *See also* white men
Massachusetts Bay Transportation Authority, 56, 58–59
materials manufacturers, 28, 143, 161–67, 168, 317n36
Mayer, Albert, xviii, 10–11
McEnaney, Laura, 16, 19, 29
McGaughan, A. Stanley, 170–71, 178, 202, 204, 205, 209–10, 228, 269
McKinnell, Noel Michael, 235, 244, 253, 256, 268
McLeod, John, 149
McLeod and Ferrara, 22
McNamara, Robert, 47, 75, 121, 122, 198
Melman, Seymour, 69
Memphis, Tennessee, 8
Menino, Thomas M., 270
Merrill, Anthony, 20, 125
militarization: concept of, xvii, xix, 17, 113, 130, 137, 269, 297n8
military defense, xiii, 16, 40, 47, 135, 150
military-industrial complex, 11, 69, 114, 130, 297n64
Minneapolis, Minnesota, 8; fallout shelters, 156, 199, 279–81
Minneapolis–St. Paul Community Shelter Plan, 86–88
Mitchell & Giurgola, 249–50
modernism (architectural style), xi, xxi, 127–28, 155; aesthetic of, 130, 148, 163–64, 174, 198, 202, 215; and alienation of the public, 240–41, 254; historiography of, xvii, 242–48, 289n15, 327–28n41; and monumentality, 146–47, 243; social idealism associated with, 139, 245, 252–53; as symbolic of U.S. values, 165–66, 326n25; transformation of, 145, 160–61, 242–45, 252
Moholy-Nagy, Sibyl, 235, 240
Montgomery, Alabama, 43
Moore, Charles, xviii, 185–87
Mumford, Lewis, xiii, 101, 127

National Academy of Sciences, 39, 95, 100, 138
National Association of Architectural Metal Manufacturers, 166–67
National Association of Home Builders, 122
National Community Fallout Shelter Design Competition Awards (shopping center), 170, 177–78, 188
National Defense Transportation Association, 56
National Fallout Shelter Design Competition, Community Center: Awards, 169, 177–78, 187
National Fallout Shelter Survey, 37, 43, 45, 47, 61, 158, 171, 206, 249; architects participating in, xiii, 44, 59, 73, 74, 83, 120, 141; data, 85–87, 122, 299n22; informing the public about, 51, 53; procedures, xx, 48,

50–54, 190; updating, 77, 203, 229, 275
national identity, xiii, 269; American, 29, 36, 38, 62, 105; architecture and American, xiv, 24, 92, 97, 166, 186, 242
National Institute for Disaster Mobilization, 131
National Interstate and Defense Highway Act, 11
nationalism and internationalism among architects, xvii, 109, 124, 139
National Lumber Manufacturers Association, 28
National Paint, Varnish and Lacquer Association, 28
National Research Council, 18
National School Fallout Shelter Design Competition Awards, 170–76, 187
national security, 34, 35, 47, 147, 228; and architecture, xxi, 141, 191, 227, 233, 277; and urban planning, 81–82. *See also* architects: and national security
National Security Resources Board, 11, 112, 170
natural disasters, 120, 179–80, 223, 227, 274–75; as models for civil defense planning, 1–2, 13, 17–20, 277
naturalization of nuclear war, 19, 150
Navy, U.S., 32, 96; Bureau of Yards and Docks, 48
"neighborhood unit" concept, 97–98, 106
Nevada nuclear tests, 26–27, 29–31, 114, 120; results, 28–29, 115, 117–18, 157. *See also* Operation Cue; Operation Doorstep
New Haven, Connecticut, 246
New Orleans, Louisiana: city hall fallout shelter, 191, 215; Civil Defense Control Center, 215, 217–18
New York (city), 1, 3, 6, 8, 246; fallout shelters, 65, 67–69, 194–97
New York (state): capitol fallout shelter, 191–92, 221; Civil Defense Commission, 98, 192, 220–21; state Emergency Operating Center, 219–21
New Yorker magazine, 187
Niemi, Richard, 71–72
No Place to Hide (Melman), 69
North American Air Defense Command (NORAD) Combat Operations Center, 211, 213
nuclear war, xvi, 99, 103, 133, 254; aftermath of, 4, 5, 39, 80, 36, 38, 92, 106, 212, 233, 271–72; targeting strategies, 8, 14, 20, 211; threat of, xvi, 2, 11, 35, 38, 40, 136–37, 179, 188, 223, 273–74. *See also* Department of Defense, U.S.: prediction of targets or fallout distribution
nuclear weapons: effects, 9, 14–15, 20–21, 37, 46, 108, 131, 157, 159–60; tonnage, 19, 295n43.
"nuclear winter" concept, 275

Oakland, California: Civil Defense Command Center, 218
Occupying a Public Shelter (film), 90–95
Office of Civil and Defense Mobilization (OCDM), 18, 98, 161; budget, 16; founding, 14–15; plans and programs, 15–16, 43; publications, 161–62, 192
Office of Civil Defense (OCD), 37, 39, 274; budget, 40, 47, 223, 298n13; collaboration with architects, 38;

critics within, 83–84, 158; founding of, 47; and local implementation, 82–84, 138; plans and programs, 34, 45–46, 82, 121, 157–58, 203; publications, 48, 121, 159; publications about buildings with fallout shelter, 194, 197–98, 202–3, 267–69; publications about fallout shelter design, 156, 168, 180, 189, 275; within Department of Defense, 227. *See also* American Institute of Architects (AIA), relationship with Office of Civil Defense
Office of Civilian Defense: during World War II, 12, 111, 112
Olney, Maryland: civil defense training center, 22–26, 149
Omaha, Nebraska, 8
Operation Cue (1955), 27, 30, 115
Operation Doorstep (1953), 27–31, 115
Orr, Douglas, 111, 112

Pei, I. M., 234–35
Pereira, William, 120; Pereira & Luckman, 120, 309n35
performance/performativity, xvi, 180–81, 188, 320n66
Perkins, Lawrence B., 130
Perkins & Will, xviii. *See also* Perkins, Lawrence B.; Will, Philip
Perry, Clarence, 97
Pevsner, Nikolaus, 246, 248
Philadelphia, Pennsylvania, 242
phoenix narratives about U.S. cities, 8, 19
Physicians for Social Responsibility, 272
Pittman, Steuart, 46, 51, 59, 61, 197
Pittsburgh, Pennsylvania, 8, 9
Pollock, Jackson, 252
Portland, Oregon: Civil Defense Control Center, 213–15
Portland Cement Association, 117
Primer for Survival, A (television series), 61–62
Prince, Harry, 112, 125
private fallout shelters. *See* fallout shelters, home
private property: used for public fallout shelter, 43, 84, 282. *See also* building owners: cooperation with civil defense officials
profession, architecture, xiii–xiv, xvii–xviii, xx–xxi, 44, 109, 128; in competition with other professions, 129. *See also* American Institute of Architects; architects
profession, urban planning, xx, 43, 79–80, 82–85, 114. *See also* American Institute of Planners
Professional Advisory Service, Civil Defense, 203, 211
Progressive Architecture (P/A), 124–26, 129, 131–32, 134, 137
Progressive Design Associates, 250–51
Project East River, 119–20
Protection Factor (PF): calculation of, 49–51, 153–54; defined, 49; of different areas within a building, 51, 71, 161, 257; minimum standards, 63, 205, 212
Protection Factor 100 (film), 35, 51, 72
protective core in buildings, 154–55, 157–58, 161, 163, 182, 202, 278
public buildings, xii–xiii, xix, xxi, 178, 232–34, 250, 266, 269; used for civil defense purposes, 36, 169, 218
public fallout shelters. *See* fallout shelters, public
Purves, Ned, 34, 111, 112, 140, 142, 308n15

race and racism, 2, 30, 34, 74, 225, 241, 295n45; and space, 136, 191, 195–96, 263. *See also* civil defense: and racial assumptions
racist real estate practices, 11, 97
radiation: attenuation by different materials, 49, 154–55, 161–63, 261
Rand, Ayn, 127–28
RAND Corporation, 80, 294n39
Reagan, Ronald, 273–75
realism, political, 136, 139, 141, 281. *See also* architects: and professional objectivity
resistance: by architects, xvii, xx, 34, 109–10, 152; by the public, xv, 47, 65, 68, 100, 108–9, 283
Rice, William Maxwell, 114, 131
Rice University, 178–79
Richmond, Virginia: fallout shelter, 205–7
Roche Dinkeloo, 246
Roembke, James, 159, 167, 168, 227–28
Rohan, Timothy, 252
Romm, Joseph, 223–24
Roos, Pieter, 68
Rose, Kenneth, 37, 40
Rudolph, Paul, 252, 327n31; Boston State Service Center, 234, 246–47; Yale Art and Architecture Building, 246

Saarinen, Eero, 184; Dulles Terminal fallout shelter, 204, 322n20
Sachs, Avigail, 114
Salvadori, Mario, 69
Saturday Evening Post, 18, 102
Scheik, William, 131–34, 138, 140–41, 149
school children, 65–68
schools, 86, 101, 146–48, 155, 161, 169–71, 247; with fallout shelters, 187, 202, 208–9, 249; fallout shelter design for, 44, 123, 163–64, 171–75; windowless, 166–67, 171, 176, 192–97
Schwarzer, Mitchell, 128
science: architects and, 108, 114, 118
Scully, Vincent, 245–46, 248, 281
self-help: in civil defense planning, 16, 36, 83
Senate, U.S., 149, 211, 223–24
Sennett, Richard, 245
Severud, Fred, 20, 125
Shanken, Andrew, 80, 147
"shelter drainage area," 85, 89, 97
Shelter Incentive Program, 40, 82, 122, 155, 314n7
shelter managers, 77, 90–93, 95, 96, 259, 262, 264
shelter occupation studies, 117–18. *See also* fallout shelter habitability
shelter surveys, xii, 38, 40, 42, 43–44, 110, 130. *See also* National Fallout Shelter Survey
shelter survey technicians, 74–75, 86. *See also* fallout shelter analysts
Sherry, Michael, xix
shielding, barrier and geometric, 49, 51, 154, 156, 159, 161, 174, 190, 207
shopping centers with fallout shelter, 169–70, 318n47. *See also National Community Fallout Shelter Design Competition Awards*
Skidmore Owings & Merrill, 204, 290n15
skyscrapers. *See* high-rise buildings with fallout shelters
slanting, 159–60, 167, 180, 187–88, 198, 204, 316n32; techniques, 154,

169, 199, 208, 277–78. *See also* fallout shelter design
slum clearance, 7, 28, 33, 43, 87, 248
Smithson, Alison and Peter, 243
social science, 39, 45, 95–97, 113
social scientists, 2, 18, 141
Sontag, Susan, 1, 69
Sorkin, Michael, 25, 73–74
Soviet Union, 38, 40, 128; nuclear capabilities and strategies, 14, 21, 37, 211; nuclear testing, 12, 17, 19, 38, 249
Spoelstra, Mark, 65–66
Standhardt, Frank, 193–94, 197
Stanford Research Institute, 80, 82–84, 86, 294n39
Stein, Clarence xviii, 7, 11, 97, 132, 253
St. Louis, Missouri, 3–4
Stoffle, M. Wayne, 215
St. Paul, Minnesota, 8, 59; fallout shelters, 53–54, 199–202; state Emergency Operating Center, 219
Strategic Bombing Survey, U.S., 9, 12, 18, 115
Structural Clay Products Institute, 162–63
Stubbins, Hugh, 132
students, college: protests against fallout shelter program, 68–69, 190, 225–26, 228–29; summer jobs as shelter survey technicians, 74–75, 303n64
suburbanization, 14, 116
suburbs, 10–11, 87, 97, 101; as areas safe from nuclear weapons effects, 2, 9, 12, 14, 20, 25, 27, 37; segregated, 11, 28; as shelter deficit areas, xx, 88, 148, 171; typical homes in, 27
Survival under Atomic Attack (film), 8–9
Survival under Atomic Attack (publication), 14
Sweden, xiv
Sweet's Construction Catalog, 204, 268
Swinburne, Herbert, 121
Switzerland, xiv

TAR (The Architect's Resistance), 225–26, 274
targets. *See* Department of Defense, U.S.: prediction of targets or fallout distribution; nuclear war: targeting strategies
Teller, Edward, 121, 130
terrorist attacks, 273, 275, 277
Toltz, King, Duvall, Anderson and Associates, 53, 59
Truman, Harry, 2, 12, 17, 19
Tulsa, Oklahoma, 43
Tyrwhitt, Jaqueline, 125

underground: construction unnecessary for fallout shelter, 150, 154, 158, 167; duplication of aboveground facilities, 98, 101, 131; Emergency Operating Centers, 212–13, 218–21; shelters, 174–75, 192–93, 207, 208, 278, 280, 316n28; structures, 157, 162, 166, 274–75; urbanism, 81, 99–101, 105
United Kingdom. *See* Great Britain
University of Kentucky, 179
University of Minnesota, 54, 68–69, 203, 275; fallout shelter, 71–72
University of Texas: fallout shelter, 70
University of Utah: fallout shelter, 156
urban dispersal, xii, xix, 2, 101, 109, 113, 119–20, 124; planning for, 10–12, 128, 292n20
urban planners, 79–84, 86, 98

urban planning (activity), 43, 82, 99, 106, 122. *See also* profession, urban planning
urban reform movement, 6, 79
urban renewal, 7–8, 82, 87, 248, 265, 280–81
urban unrest, 191, 196–97, 222–24, 266, 270, 274
U.S. Strategic Bombing Survey. *See* Strategic Bombing Survey, U.S.

Vale, Lawrence J., xiii
Vanderbilt, Tom, 100, 211–12
Vietnam War, 80, 190, 222
Virilio, Paul, 244
Visher, Paul, 120–22, 192

Walker, Ralph, 127, 129
war: total (concept), xiv, 146, 244; as urban phenomenon, 101, 282
War Game, The (film), 225
Washington, D.C., 5, 8, 22, 64, 247, 278; fallout shelters, 59–60, 204, 295n49; Mayor's Command Center, 222–23
Welch, Lyndon, 44, 123
welfare planning, xv, 13, 39, 81, 147, 232
welfare state, xv, xx, 13, 34, 39, 75, 106; buildings associated with, xix, 147, 169, 248; civil defense imagining ultimate development of, 36, 72, 262; funding of programs, 148; institutions, 244; legislation, xv, 41, 145–46
white men, 32–33, 91, 99–100, 102, 263
whiteness, 30, 34, 134
white people, 12, 29–32, 36, 37, 104, 196
Why Buildings Fall Down (Salvadori), 69
Whyte, William H., 245, 281
Will, Philip, 120, 122, 130–31, 137, 141, 151; on the potential contribution of architects to civil defense, xvi, 107, 123, 134, 139, 249
World War II, 17; bomb damage, 3, 5; bombing, 8, 157; civil defense, 12, 22, 157
Wright, Frank Lloyd, 128
Wright, Henry, 97

Young Architects' Power Committee, 226
Yucca Flats. *See* Nevada nuclear tests

Zevi, Bruno, 245

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PLATE 1. Hypothetical attack scenario illustrated on the cover of *Collier's,* August 5, 1950. Artwork by Chesley Bonestell. Reproduced courtesy of Bonestell LLC.

PLATE 2. "Victim" being prepared with fake blood for civil defense rescue training in the United Kingdom. From *Collier's*, August 5, 1950.

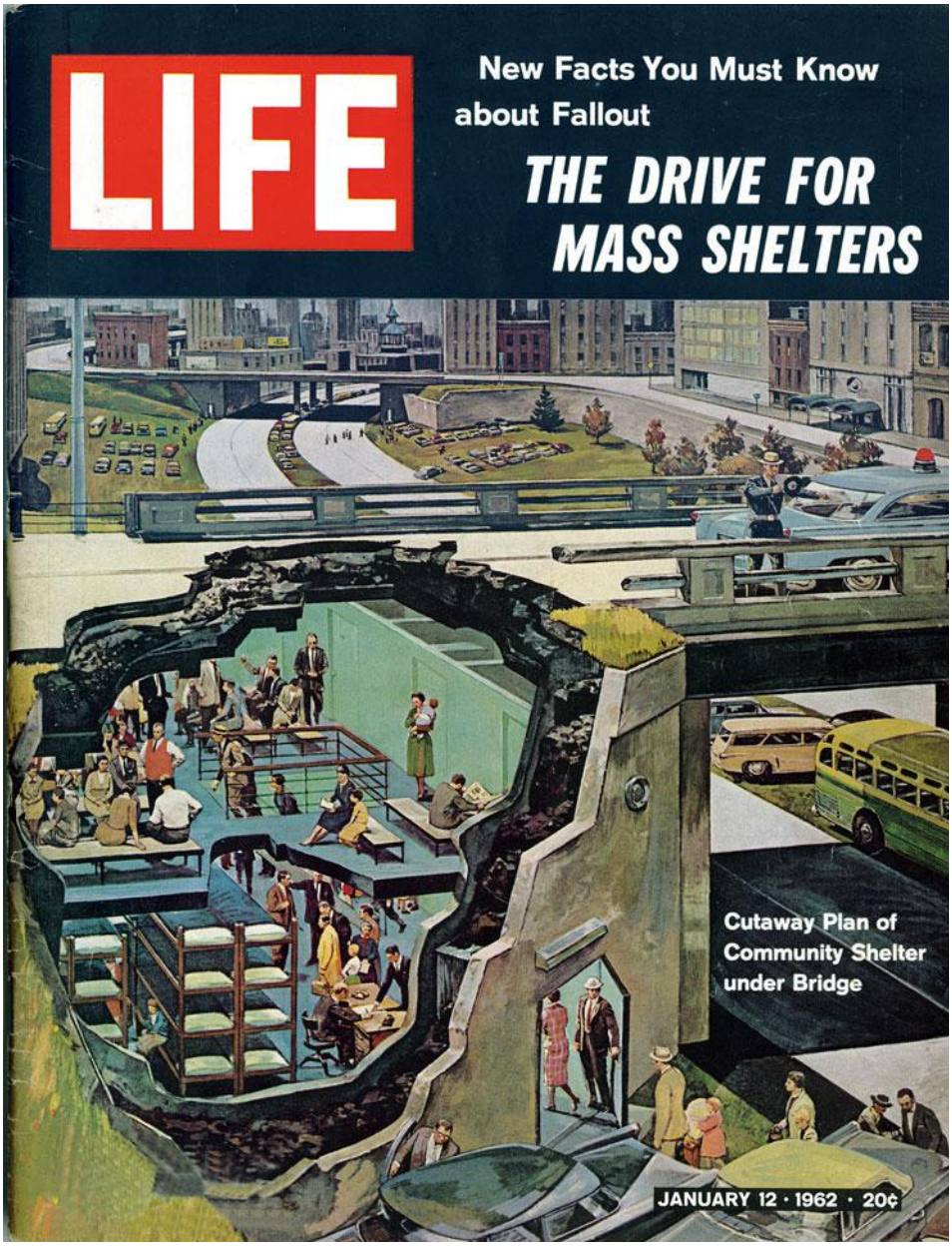

LIFE
New Facts You Must Know about Fallout
THE DRIVE FOR MASS SHELTERS
Cutaway Plan of Community Shelter under Bridge
JANUARY 12 · 1962 · 20¢

PLATE 3. Cover of *Life,* January 12, 1962, depicting an urban public fallout shelter. Author's collection.

PLATE 4. Posting a fallout shelter sign on an apartment building in Falls Church, Virginia. Photo no. 29-S-106; RG 397-MA; National Archives, College Park, Maryland.

PLATE 5. A well-preserved fallout shelter sign in Manhattan. Photograph by the author.

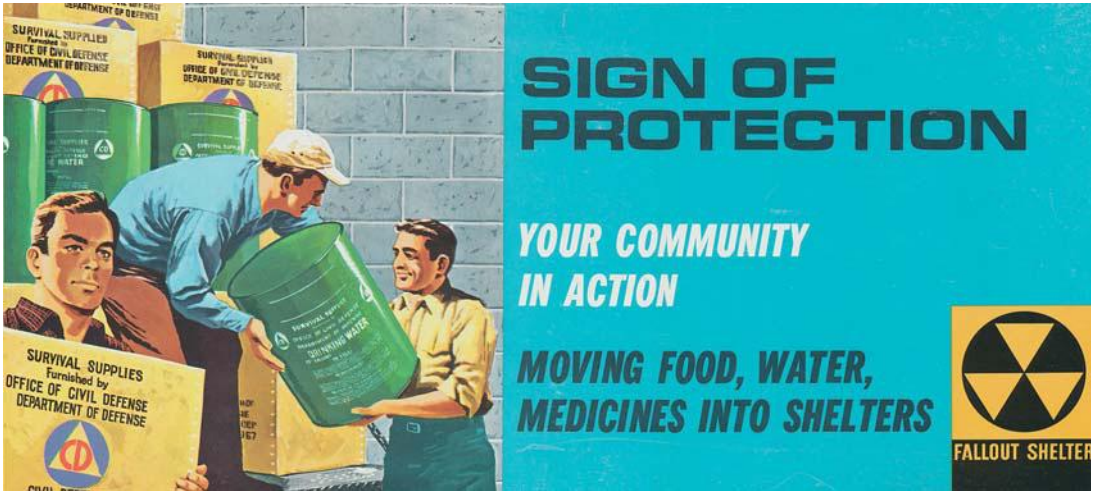
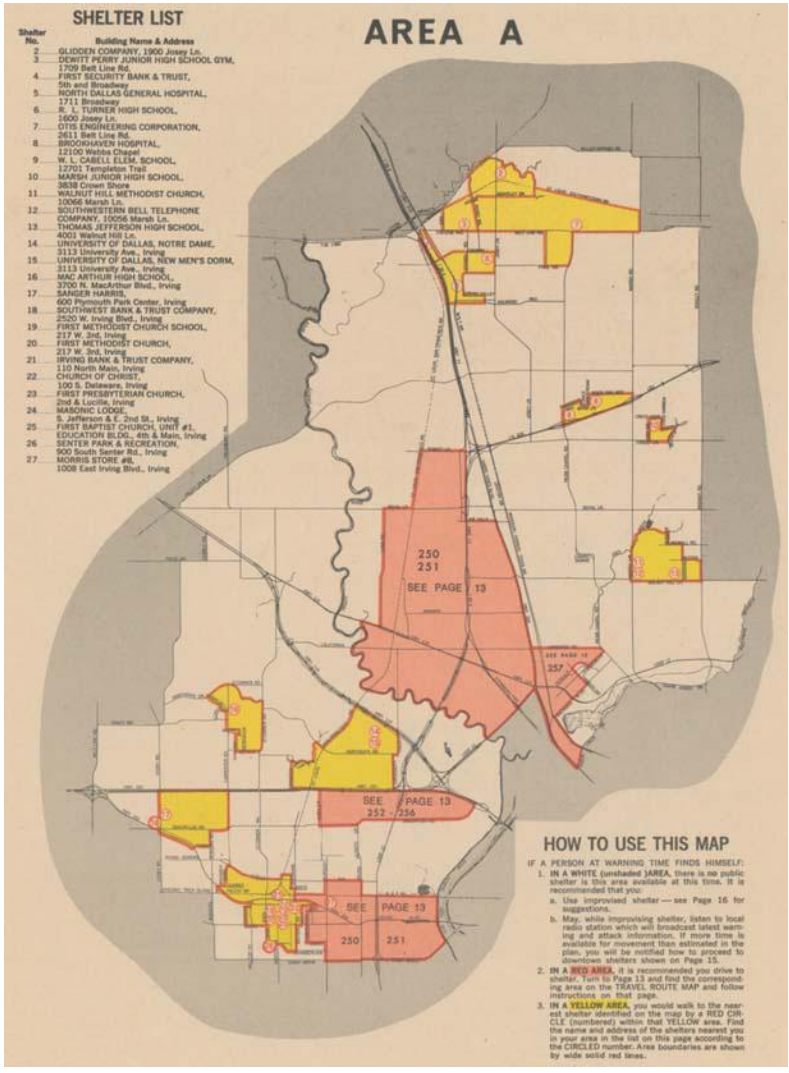


PLATE 6. Office of Civil Defense public transit advertisement advising citizens of the National Fallout Shelter Program. Courtesy of www.civildefensemuseum.com.

PLATE 7. Office of Civil Defense traveling exhibit that displayed shelter supplies to the public. Photo no. 311-D-17; RG 311-D; National Archives, College Park, Maryland.

PLATE 8. Community Shelter Plan depicting a portion of Dallas, Texas. A list of shelter addresses is on left. In yellow drainage areas citizens could walk to shelters; in red areas they would need to drive their cars. In white areas, the instructions note, no fallout shelter is available. From Dallas City-County Civil Defense and Disaster Commission, *Fallout Shelters in Dallas County* (Dallas: The Commission, 1970). Courtesy of www.civildefensemuseum.com.


SHELTER LIST
Shelter No.
Building Name & Address
2 GLIDDEN COMPANY, 1900 Josey Ln.
3 DEWITT PERRY JUNIOR HIGH SCHOOL GYM, 1709 Belt Line Rd.
4 FIRST SECURITY BANK & TRUST, 5th and Broadway
5 NORTH DALLAS GENERAL HOSPITAL, 1711 Broadway
6 R. L. TURNER HIGH SCHOOL, 1600 Josey Ln.
7 OTIS ENGINEERING CORPORATION, 2611 Belt Line Rd.
8 BROOKHAVEN HOSPITAL, 12100 Webbs Chapel
9 W. L. CABELL ELEM. SCHOOL, 12701 Templeton Trail
10 MARSH JUNIOR HIGH SCHOOL, 3838 Crown Shore
11 WALNUT HILL METHODIST CHURCH, 10066 Marsh Ln.
12 SOUTHWESTERN BELL TELEPHONE COMPANY, 10056 Marsh Ln.
13 THOMAS JEFFERSON HIGH SCHOOL, 4001 Walnut Hill Ln.
14 UNIVERSITY OF DALLAS, NOTRE DAME, 3113 University Ave., Irving
15 UNIVERSITY OF DALLAS, NEW MEN'S DORM, 3113 University Ave., Irving
16 MAC ARTHUR HIGH SCHOOL, 3700 N. MacArthur Blvd., Irving
17 SANGER HARRIS, 600 Plymouth Park Center, Irving
18 SOUTHWEST BANK & TRUST COMPANY, 2520 W. Irving Blvd., Irving
19 FIRST METHODIST CHURCH SCHOOL, 217 W. 3rd, Irving
20 FIRST METHODIST CHURCH, 217 W. 3rd, Irving
21 IRVING BANK & TRUST COMPANY, 110 North Main, Irving
22 CHURCH OF CHRIST, 100 S. Delaware, Irving
23 FIRST PRESBYTERIAN CHURCH, 2nd & Lucille, Irving
24 MASONIC LODGE, S. Jefferson & E. 2nd St., Irving
25 FIRST BAPTIST CHURCH, UNIT #1, EDUCATION BLDG., 4th & Main, Irving
26 SENTER PARK & RECREATION, 900 South Senter Rd., Irving
27 MORRIS STORE #8, 1008 East Irving Blvd., Irving
AREA A
250
251
SEE PAGE 13
257
SEE PAGE 13
252 - 256
SEE PAGE 13
250 251
HOW TO USE THIS MAP
IF A PERSON AT WARNING TIME FINDS HIMSELF:
1. IN A WHITE (unshaded)AREA, there is no public shelter is this area available at this time. It is recommended that you:
a. Use improvised shelter — see Page 16 for suggestions.
b. May, while improvising shelter, listen to local radio station which will broadcast latest warning and attack information. If more time is available for movement than estimated in the plan, you will be notified how to proceed to downtown shelters shown on Page 15.
2. IN A RED AREA, it is recommended you drive to shelter. Turn to Page 13 and find the corresponding area on the TRAVEL ROUTE MAP and follow instructions on that page.
3. IN A YELLOW AREA, you would walk to the nearest shelter identified on the map by a RED CIRCLE (numbered) within that YELLOW area. Find the name and address of the shelters nearest you in your area in the list on this page according to the CIRCLED number. Area boundaries are shown by wide solid red lines.

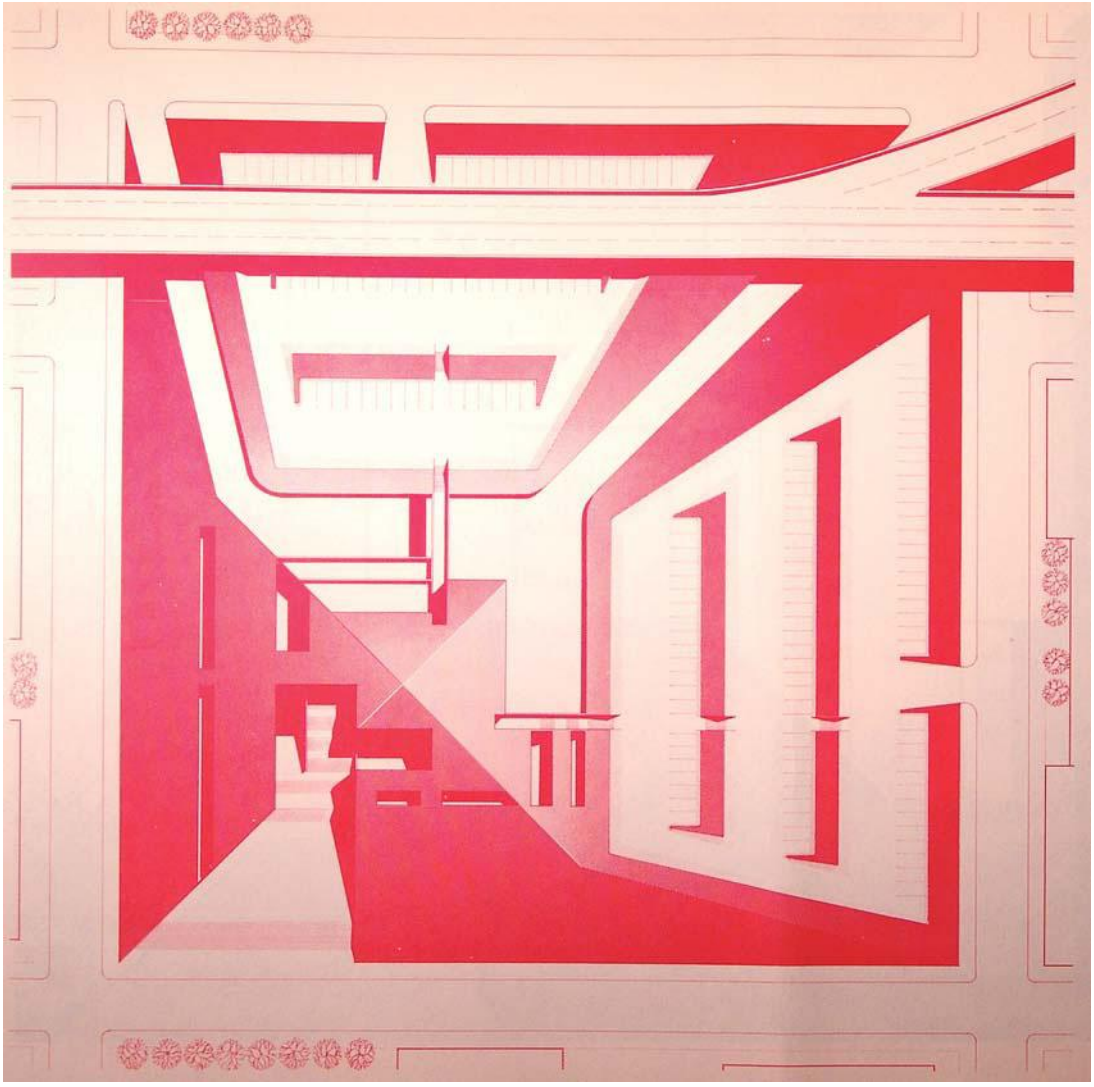


PLATE 9. Site plan of Charles Moore's pyramidal city hall for "Tortilla," designed for the charrette at the University of Kentucky. From Office of Civil Defense, *City Halls and Emergency Operating Centers* (Washington, D.C.: Government Printing Office, 1965).

PLATE 10. Perspective of Abo Elementary School and Fallout Shelter, Artesia, New Mexico. Photograph courtesy of Byron Miller.

PLATE 11. East–west section of Boston City Hall. Emergency Operations Center in dark blue; fallout shelter spaces in light blue. From Office of Civil Defense, *Boston City Hall/Boston, Massachusetts: Buildings with Fallout Protection, Design Case Study 7* (Washington, D.C.: Government Printing Office, 1971).